



CLINICAL CASE REGISTRIES HEPATITIS C (HEP C) TECHNICAL MANUAL/SECURITY GUIDE

Version 1.0

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VistA System Design & Development

Revision History

Date	Page	Description
09/23/2002		Revisions associated with the patch ROR*1.0*2
	1	File names were corrected and made consistent with the contents of the anonymous FTP directories.
	7	Listing of the Clinical Case Registries Maintenance menu was updated with a new Pending Patients submenu.
	10	The Pending Patients and List of Pending Errors sections were added.
	18	The New Globals section has been added.
	21	The diagram of the Clinical Case Registries Maintenance menu was updated.
	27	Number of days to keep log entries was changed from 30 to 14.
	45	A note regarding the FileMan access to the files was added to the Security Keys section.
	87	List of LOINC codes in the Appendix B was updated.

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Preface

The Veterans Health Information Systems and Technology Architecture (VistA) Clinical Case Registries for Hepatitis C Case Registry Technical Manual provides instructions required for the new software.



Throughout this document Clinical Case Registries is always referred to in the context of a Hepatitis C Case Registry as the creation of the Hepatitis C Case Registry is the primary motivation for this document.

Recommended Users

Information in this manual is technical in nature and is intended to be used by Veterans Affairs Medical Center (VAMC) Information Resource Management (IRM) staff members and Local Coordinators.

Related Manuals

Clinical Case Registries Installation Guide Version 1.0
Clinical Case Registries User Guide Version 1.0

Software and Manual Retrieval

The VistA Hepatitis C Case Registry software files and Technical Manual (i.e., ROR1_0TM.PDF) are available on the following Office of Information Field Offices (OIFOs) ANONYMOUS SOFTWARE directories.

OIFO	FTP Address	Directory
Albany	ftp.fo-albany.med.va.gov	anonymous.software
Hines	ftp.fo-hines.med.va.gov	anonymous.software
Salt Lake City	ftp.fo-slc.med.va.gov	anonymous.software

VistA Hepatitis C Case Registry software and documentation are distributed as the following set of files:

File Name	Contents	Retrieval Format¹
ROR1_0.KID	KIDS build	ASCII
ROR1_0GUI.ZIP	Zipped GUI distributive	BINARY
ROR1_0IG.PDF	Installation Guide	BINARY
ROR1_0TM.PDF	Technical Manual	BINARY
ROR1_0UM.PDF	User Manual	BINARY

VistA Intranet WWW Documentation

Online Documentation for this product is available on the intranet (World Wide Web) at the following address: <http://vista.med.va.gov/vdl/>. This address takes you to the VistA Documentation Library (VDL), which has a listing of all the clinical software manuals. Click on the Clinical Case Registries link and it will take you to the Hepatitis C Case Registry documentation.

You can also access the Hepatitis C Case Registry home page by using the following address: <http://vista.med.va.gov/clinicalspecialties/>.

¹ Patch ROR*1.0*2 – October 2002 – File names corrected.

Introduction

The Hepatitis C Case Registry contains important demographic and clinical data on all VHA patients identified with Hepatitis C infection. The registry extracts VistA pharmacy, laboratory, and pathology data in order to provide the key clinical information needed to track disease stage, disease progression, and response to treatment. Data from the Hepatitis C Case Registry is used on the national, regional, and local level to track and optimize clinical care of Hepatitis C infected veterans served by VHA. National summary information (without personal identifiers) will be available to VA Central Office for overall program management as well as to inform Veterans Service Organizations, Congress, and to other federal public health and health care agencies.

This VistA software package provides several key functions:

- Automatically develops a list of patients with Hepatitis C infection,
- Provides a Graphical User Interface (GUI) interface for local facility staff to add/edit the list.
- Allows the local designation of whether a patient is on an investigational drug for Hepatitis C.
- Sets up the nightly transmission of data elements for the patients on this list to a national database. Those data elements basically include: patient demographic information, reason the patient was added to the registry list (International Classification of Diseases (ICD) code, lab test, or manually), pharmacy utilization, radiology test utilization, and whether or not a patient underwent liver biopsy (based on pathology info) and a limited set of lab tests results.
- Generation of three local reports—
 - One which provides a list of patients on the registry (with ability to select a subset based on when they were added to the list),
 - The second provides a list of patients on the registry who have received Hepatitis C therapy within a chosen time period,
 - The third provides a local software activity and error report.
- Technical improvements including:
 - The nightly updates to the list and transmission of data
 - Use of a uniform M (formerly MUMPS) program backbone that can be used for other disease case registries
 - The transformation of VistA data into standard HL7 formatted messages for transmission (including limited validation checks, error messaging, etc.)

Treatment Recommendations for Patients with Chronic Hepatitis C

VA treatment guidelines for Hepatitis C care can be viewed at the following World Wide Web (WWW) address: http://www.va.gov/hepatitisc/pved/treatmntgdlnes_00.htm.

Orientation

The user's response in this manual is in **bold** type, but does not appear on the screen as bold. The bold part of the entry is the letter or letters that you must type so that the computer can identify the response. In most cases, you need only enter the first few letters. This increases speed and accuracy.

Every response you type must be followed by pressing the return key (or enter key for some keyboards). Whenever the return or enter key should be pressed, you will see the symbol **<RET>**. This symbol is not shown but is implied if there is bold input.

Within the roll and scroll part of the system, help frames may be accessed from most prompts by entering one, two, or three question marks (?, ??, ???).

Within the examples representing actual terminal dialogues, the author may offer information about the dialogue. You can find this information enclosed in brackets, for example, *{type ward name here}*, and will not appear on the screen.

The computer dialogue appears in `Courier font`.



This *boxed* element highlights special details about the current topic.

Implementation and Maintenance

Implementation

Please refer to the Clinical Case Registries, Hepatitis C (Hep C) Installation Guide for additional information about installing and implementing the software.

Maintenance¹

The Clinical Case Registries Maintenance Menu [RORMNT MAIN] has five options the site can use to customize and maintain their use of the software:

Clinical Case Registries Maintenance	[RORMNT MAIN]
EAA Edit 'Awaiting ACK' flag	[RORMNT AWAITING ACK]
ELS Edit Lab Search Criteria	[RORMNT EDIT LAB SEARCH]
ERP Edit Registry Parameters	[RORMNT EDIT REG PARAMS]
PLF Print Log Files	[RORMNT PRINT LOGS]
PP Pending Patients	[RORMNT PENDING PATIENTS]
LPE List of Pending Errors	[RORMNT PENDING ERRORS LIST]

Edit 'Awaiting ACK' flag

The AWAITING ACKNOWLEDGEMENT field of the ROR REGISTRY PARAMETERS file (#798.1) holds date/time of the last HL7 message sent to AAC (Austin Automation Center). Upon successful receiving and processing of the corresponding application acknowledgement the value of this field is deleted automatically.

If the message is sent but the acknowledgement is not received, no further data transmissions will take place until the message expires after number of days defined by the DAYS TO WAIT FOR ACK field (1 by default). Then the field will be cleared automatically and the package will try to send another message.

Usually, you should not edit this field. However, if you are sure that there will be no acknowledgement from the AAC but it is ready to receive the message during the next night, you can delete the value of this field to resume regular data transmissions.

¹ Patch ROR*1.0*2 – October 2002 – Menu updated.

Edit Lab Search Criteria

This option allows you to enter the Lab Search criteria used by the Update process. Different sites use different values to indicate that a test result is positive (i.e., P, +, etc.); this option allows sites to enter LOINC codes along with the values for positive results. Before the installation of the Clinical Case Registries system, IRMs must get the LOINC codes used and values to indicate positive results from the laboratory Information Manager (LIM) for Hepatitis C.

You must first select the lab search name. The installation process automatically sets up an empty record for the Hepatitis C Case Registry called "VA HEPC." The LOINC code is the next prompt.

Next, you need to enter an indicator; the five choices are:

- 0 Ignore
- 1 Use Reference Range
- 2 Contains
- 3 Greater Than
- 4 Less Than
- 5 Equal To

The value of the INDICATED VALUE field (#798.92,2) within this option indicates the comparison operation applied to the Lab result.

For example, if the internal value of this field is equal to 3 (i.e., equating to "Greater Than") and the value of the INDICATED VALUE field (#798.92,2) is five then this indicator will be evaluated as True for all numeric Lab results values greater than five.

The only exception is the "Use Reference Range" indicator, which checks if the result value is outside of the reference range defined for the Lab test.

The "Contains" indicator checks if the indicated value is contained in the Lab result value.



All string comparisons are case insensitive.

The next prompt is the Indicated Value prompt, which is described within the explanation of the "Indicator" prompt.

You can continue to add LOINC codes to this list. You can exit the code entering level of this option by pressing return at the LOINC code prompt (i.e., entering nothing). The option then displays the "Status" prompt, valid responses to this are as follows:

- 0 ACTIVE
- 1 INACTIVE

If you select to inactivate any of the lab search criteria, it will not be applied during registry updates.

Edit Registry Parameters

This option allows you to edit the registry parameters. These values can alter the way the system works on a site-by-site basis. The majority of these values will be set during installation. If in doubt, these entries should not be edited. This option would typically be run in between phase one and phase two of the installation to enter Log Event Types and Coordinators.

You will first have to select a registry. The Registry Updated Until prompt and the Data Extracted Until prompt dates will be entered during the installation of the system. They will be subsequently updated during the daily update and extract processes. These fields should only be edited in situations such as a system failure. The "Extract Period for New Patient" prompt is the number of days subtracted from the date a new patient first selection rule was passed that the extract process uses when extracting data. This number is set into this field upon installation and should only be changed if a directive is issued.

The Enable Log field allows you to turn the log on or off. The log holds information about updates and extracts, contains date information, warnings, and error data.

The "Log Events" multiple allows the system to monitor the registry on various levels. If this field is left empty (default), all events except debug messages are recorded in the log file. If the multiple contains one or more records, only events specified by these records and error messages will be recorded. Possible event types are:

- 1 Debug
- 2 Information
- 3 Data Quality
- 4 Warning
- 5 Database Error
- 6 Error

Debug messages: are intended for registry troubleshooting. No such messages are generated at this time. This value is reserved for future use.

Information messages: can be used as formatting elements (headers, trailers, separators, etc.) and as a source of additional information that may be helpful in the troubleshooting process.

Data Quality messages: indicate possible issues with the data in the FileMan files (missing or invalid values, ambiguous data, etc.).

Database Error messages: most of these error messages are generated by the FileMan DBS calls. Usually, these messages indicate serious problems with the database.

Error messages: indicate fatal problems during the execution. Usually, processing of the patient data (or even the registry as a whole) stops after these errors. Errors are recorded regardless of content of the "Log Events" multiple.

You may enter a new LOG EVENTS, if you wish select the type of event and if you want to enable recording of these events. If the list is empty, recording of all events is enabled. Otherwise, only events from the list and error messages will be recorded.

Debug messages are exclusions from this rule (they are not logged if "ENABLE LOG" is set to "Yes" and this multiple is empty). Their recording can be enabled only explicitly.

Print Log Files

This option allows you to print the log files. The option uses standard spooling and device selection.

Pending Patients¹

This menu groups the options used for maintenance of the ROR PENDING PATIENT file containing event and error references.

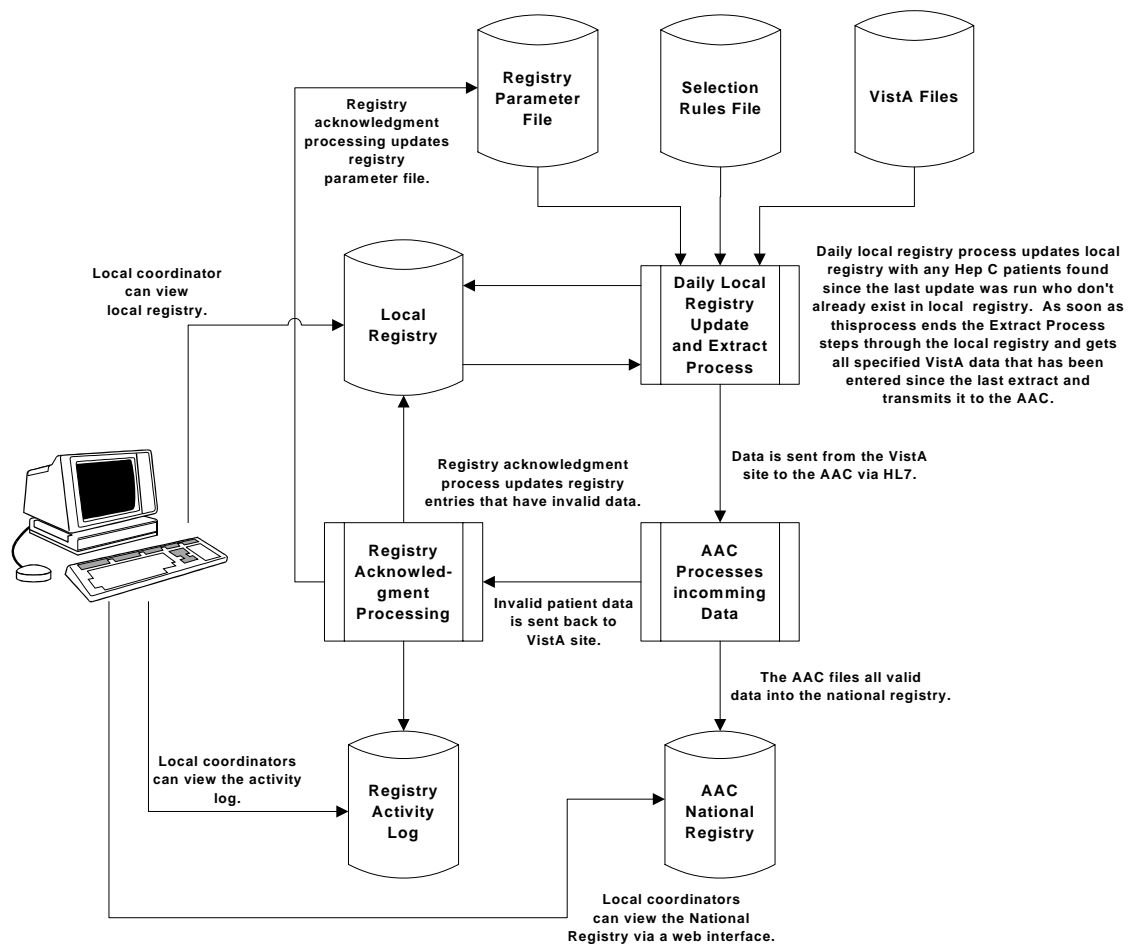
List of Pending Errors

This option prints a report containing a list of patients (referenced by the ERROR multiples of the ROR PENDING PATIENT file) having erroneous data. The list is sorted by value of the COUNTER field (number of times that an error was recorded for a patient by the registry update process).

This report can be used to find the patients ignored by the registry update (until someone fixes the error(s) and resets value of the COUNTER field to 1).

¹ Patch ROR*1.0*2 – October 2002 – Added Pending Patients and List of Pending Errors to documentation.

Process Overview



File Diagram

File/Package: CLINICAL CASE REGISTRIES

Date: APR 26,2002

FILE (#) POINTER FIELD	POINTER TYPE	(#) FILE POINTER FIELD	FILE POINTED TO
L=Laygo *=Truncated	S=File not in set m=Multiple	N=Normal Ref. v=Variable Pointer	C=Xref.
<hr/>			
ROR HDT TASK (#798.53) ERROR:RECORD (N)->		798 ROR LOCAL REG* PATIENT NAME REGISTRY INACTIVATED BY REASON FOR INACT* SUPPORTING EVIDE* REACTIVATED BY m SELECTI:SELECTI*	-> ROR PATIENT -> ROR REGISTRY PARAM* -> NEW PERSON -> ROR LIST ITEM -> ROR LIST ITEM -> NEW PERSON -> ROR SELECTION RULE
<hr/>			
ROR LOCAL REGISTRY (#798) REGISTRY (N C)-> ROR PENDING PATIENT (#798.31) ERROR:REGISTRY (N)-> ROR HDT TASK (#798.5) REGISTRY (N C)-> ROR PHARMACY CODE (#798.6) REGISTRY (N C)-> ROR LOG (#798.73) REGISTRY (N)-> ROR LIST ITEM (#799.1) REGISTRY (N)->		798.1 ROR REGISTR* PROTOCOL m COORDIN:COORDIN*	-> PROTOCOL -> NEW PERSON
<hr/>			
ROR LOCAL REGISTRY (#798.01) SELECTION RULE (N)->		798.2 ROR SELECTI*	
<hr/>			
		798.3 ROR PENDING* PATIENT NAME m ERROR:REGISTRY	-> PATIENT -> ROR REGISTRY PARAM*
<hr/>			
ROR LOCAL REGISTRY (#798) PATIENT NAME (N C L)->		798.4 ROR PATIENT PATIENT NAME RACE PERIOD OF SERVICE m RATED D:RATED D*	-> PATIENT -> RACE -> PERIOD OF SERVICE -> DISABILITY CONDITI*
<hr/>			
		798.5 ROR HDT TASK REGISTRY LOG m ERROR:RECORD	-> ROR REGISTRY PARAM* -> ROR LOG -> ROR LOCAL REGISTRY

			798.6 ROR PHARMAC*	
			DRUG CLASS	-> VA DRUG CLASS
			REGISTRY	-> ROR REGISTRY PARAM*
ROR HDT TASK (#798.5)				
LOG	(N)->	798.7 ROR LOG		
		m REGISTRY:REGISTRY		-> ROR REGISTRY PARAM*
		MESSAGE:PATIENT		-> PATIENT
ROR LOCAL REGISTRY (#798)				
REASON FOR INACTIVATION ..	(N)->	799.1 ROR LIST IT*		
SUPPORTING EVIDENCE	(N)->	REGISTRY		-> ROR REGISTRY PARAM*
ROR METADATA (#799.2)				
PARENT	(N)->	799.2 ROR METADATA		
		PARENT		-> ROR METADATA

Hepatitis C Case Registry Files

The following is a listing of the files exported with the Hepatitis C Case Registry software.

New Files	Descriptions
#798 -- ROR LOCAL REGISTRY	The ROR LOCAL REGISTRY file (#798) contains records of local registries. Each record associates a patient with a registry and contains registry specific and additional service information (when the patient has been added to the registry, if the patient record is active or no.).
#798.1 -- ROR REGISTRY PARAMETERS	<p>Records of the ROR REGISTRY PARAMETERS file (#798.1) contain various registry parameters and the data that indicates current registry state. Every registry must have a record in this file.</p> <p>Records of this file are uniquely identified by the registry name (the "A" primary key and the uniqueness index "B" are used for that purpose).</p>
#798.2 -- ROR SELECTION RULE	<p>This ROR SELECTION RULE file (#798.2) contains selection rules. The REGISTRY PARAMETERS file (#798.1) points to these rules. During a registry update, if a patient is found that passes any of these rules they will be added to the registry.</p> <p>The ROR SELECTION RULES file contains definitions of the selection rules used to screen patients for addition to the registries. There are two kinds of rules: top-level and lower level.</p> <p>If a rule is referenced by ROR REGISTRY PARAMETERS file (#798.1), it is the top-level rule. Non-zero value of any top-level rule expression directly determines that the patient should be added to the corresponding registry.</p> <p>Lower level rules are referenced only by other rules (by rule macros in the expressions). Their expressions are evaluated in the proper order, and the result values are used in the expressions of other rules. Lower level rules have an indirect impact on the result and can be used for complex processing of linked files and multiples.</p> <p>For example, a lower level rule can calculate maximum and minimum values of a parameter in the sub-file, and a top-level rule will analyze these values and decide if the patient should be added to the registry. Moreover, they could be used to split a very complex rule into several simpler rules.</p> <p>Records of the file are uniquely identified by the rule name (a primary key "A" and an uniqueness index "B" are used for that purpose).</p>

New Files	Descriptions
#798.3 -- ROR PENDING PATIENT	<p>The ROR PENDING PATIENT file (#798.3) is used to store references for those patients that were processed with errors and were not added to the registry.</p> <p>Moreover, the data references generated by the event protocols are stored in this file (see the EVENT multiple). These references are used to speed up the regular registry updates.</p> <p>Records of the file have the same internal entry numbers as the internal values of the PATIENT NAME field ("DINUM" feature).</p>
#798.4 -- ROR PATIENT	<p>The ROR PATIENT file (#798.4) contains patient information that is common for all local registries (mostly, demographic information).</p> <p>Most of the fields in the file have the same numbers and names as the corresponding fields in the PATIENT file (#2)</p> <p>Demographic data from this file is compared to that from the PATIENT file (#2) to determine if it has been changed since the last registry data extraction. These fields are updated with the values from the PATIENT file and the UPDATE DEMOGRAPHICS flag is set to "Yes" in all active registry records of the patient.</p> <p>Records in the file have the same internal entry numbers as the patients' records in the PATIENT file (#2).</p> <p>Records of the file are uniquely identified by internal value of the PATIENT NAME field.</p>
#798.5 -- ROR HDT TASK	<p>Several data extraction tasks can be defined to speed up the historical data extraction process. Records of this file contain task parameters and data indicating the current state of the tasks.</p> <p>By default, the single task is defined for the registry by the KIDS post-install routine.</p> <p>Records of the file are uniquely identified by the registry (the REGISTRY field (#798.6,02)) and IEN of the local registry record that the historical data extraction starts from (the START RECORD IEN field (#798.5,.01)). The "A" primary key and the "C" uniqueness index are used for this purpose.</p>
#798.6 -- ROR PHARMACY CODE	<p>The ROR PHARMACY CODE file (#798.6) holds the pharmacy codes used within the GUI drug report.</p>
#798.7 -- ROR LOG	<p>The ROR LOG file (#798.7) holds information regarding all events that occur within the registries. All update, extract and historical extract information is logged in this file. Information about start dates, end dates, and all errors encountered are stored in this file.</p>

New Files	Descriptions
#798.8 -- ROR LAB REFERENCE	<p>The registry update process uses the ROR LAB REFERENCE file (#798.8) to store the dates when Lab results were found.</p> <p>This allows the Clinical Case Registries package to overcome a limitation of the existing API (GCPR^LA7QRY). The API extracts Lab results in the timeframe defined by the dates when the specimens were taken. However, the results may be available and entered into the VistA system much later than those dates. Because of this, some results may be missed during the data extraction.</p> <p>To solve this problem the extraction process searches for the results not from the date of the previous run of the process but from the date that is earlier by a predefined number of days (this number should be not less than the longest processing time of the results). Thus, the data extraction intervals will be overlapped by this number of days.</p>
#798.9 -- ROR LAB SEARCH	<p>ROR LAB SEARCH file (#798.9) stores Lab search criteria. These criteria are referenced by the selection rules and used in the search for Lab results.</p> <p>It is possible but not recommended to use the same criterion for several different registries.</p> <p>Records of the file are uniquely identified by the criterion name. The "A" primary key and the "B" uniqueness index are used for this purpose.</p>
#799.1 -- ROR LIST ITEM	<p>The ROR LIST ITEM file (#799.1) contains code sets used within different registries.</p> <p>For example, the REASON FOR INACTIVATION field (#798,2.2) of the ROR LOCAL REGISTRY file (#798) may have different sets of possible values for different registries. All these values (for all registries) are stored in this file. The same is true for the SUPPORTING EVIDENCE field (#798,3.2) of the same file.</p> <p>Records of the file are uniquely identified by the type (it associates the set of values with the registry field), registry, and item code. The "A" primary key and the "KEY" uniqueness index are used for this purpose.</p>

New Files	Descriptions
#799.2 -- ROR METADATA	<p>The ROR METADATA file contains descriptors of the files, data elements, and APIs used by the registry update subsystem (search engine). These descriptors define relationships between files ("file-processing tree") used by the search engine, data elements, and APIs.</p> <p>The expression parser uses data stored in this file to validate expressions that implement selection rules.</p> <p>Data from this file loaded and prepared by the \$\$METADATA^RORUPR1 function is used by the registry update process to load values of the data elements using appropriate APIs.</p> <p>Developers can use this file as a source of information required for definition of new selection rules for new national or local registries (supported files and data elements, APIs, DBIAs, etc.).</p> <p>All modifications of the registry update routines that affect the file-processing tree, APIs or supported data elements must be reflected in the ROR METADATA file (#799.2).</p> <p>Records of this file have internal entry numbers equal to the corresponding file numbers.</p>

New Globals¹

Two new globals are created during the installation of the KIDS build: ^ROR and ^RORDATA. The ^ROR global is quite small and mostly static. It contains the registry parameters, selection rules, Lab search definitions, etc.

The ^RORDATA global is a dynamic global and most probably will be big. It will contain the registries, error logs, list of the event references, etc. The sustained growth of the ^RORDATA depends on the number of new patients in the registries (about 200 bytes per patient). However, in the first couple of weeks the global will grow faster because of the error logs (the ROR LOG file) and event references (the EVENT multiple of the ROR PENDING PATIENT file). Both files are self-maintained and the nightly task (the [ROR TASK] option) purges the old records from these files automatically. The initial growth of these files depends on activity level (number of events) and quality of the data (number of error messages stored in the logs) at your site.

¹ Patch ROR*1.0*2 – October 2002 – New global section added.

Routines

The following routines are included in Hepatitis C Case Registry software.

Routines	Descriptions
ROR	Clinical Registries
RORACK	Acknowledgement Processing
RORACK01	Acknowledgement Processing
RORAPI01	Clinical Registries API
RORDD	Data Dictionary Utilities
RORENV01	Environment Check Routine (VA Hep C)
RORERR	Error Processing
RORERR10	AAC Error Messages
RORERR20	List Of Error Messages
ROREVT01	Event Protocol
ROREXPR	Preparation For Data Extraction
ROREXT	Data Extract & Transmission
ROREXT01	Extraction & Transmission Process
ROREXT02	Body of a HL7 Message
ROREXTUT	Data Extract Utilities
RORHDT	Historical Data Extraction
RORHDT01	Historical Data Extraction Status
RORHDT02	Create Extraction Task Records
RORHDT03	Manipulations with Extraction Tasks
RORHDT04	Historical Data Extraction Process
RORHDT05	Historical Data Extraction Functions
RORHDTAC	Data Extraction Action Confirmations
RORHDTUT	Historical Data Extraction Utilities
RORHL01	Clinical Registries Segment APIs
RORHL02	Clinical Registries Segment APIs - REGISTRY DATA
RORHL03	Clinical Registries Segment APIs - OP PHARMACY
RORHL04	Clinical Registries Segment APIs - RADIOLOGY
RORHL05	Clinical Registries Segment APIs - AUTOPSY
RORHL06	Clinical Registries Segment APIs - Liver Biopsy
RORHL07	Clinical Registries Segment APIs - IP Pharmacy
RORHL7	HL7 Transmission
RORKIDS	Install Utilities (Low-Level)
RORLOG	Log File Management
RORLOG01	Log File Management (Utilities)
RORPOS01	Post-Install Routine (VA Hep C)
RORPOSU1	Post-Install Utilities (High-Level)
RORPRE01	Pre-Install Routine (VA Hep C)
RORRP1	Manual Registry Update
RORRP10	Set/Get GUI Settings RPC

Routines	Descriptions
RORRP2	Clinical Registries - Remote Procedures
RORRP3	Activate/Inactivate
RORRP4	Clinical Registries - Remote Procedures - Report
RORRP5	Clinical Registries Patient Search RPC
RORRP6	Clinical Registries - Remote Procedures
RORRP7	Activity Log RPC
RORRP8	Patient Sensitivity Checks RPC
RORRP9	Hep C Drug Therapy List RPC
RORSET01	Registry Setup Routine (VA HEPC)
RORSETU1	Setup Utilities (User Interface)
RORSETU2	Setup Utilities (Registry)
RORUPD	Registry Update
RORUPD01	Processing of the Files
RORUPD04	Processing of the Lab Data
RORUPD05	Registry Update (Multitask)
RORUPD06	Registry Update (Miscellaneous)
RORUPD07	Processing of the 'Problem'
RORUPD08	Processing of 'VSIT' & 'V POY' Files
RORUPD09	Processing of The 'PTF' File
RORUPD50	Update the Patient in The Registries
RORUPD51	Update Patient's Demographic Data (1)
RORUPD52	Update Patient's Demographic Data (2)
RORUPDUT	Registry Update Utilities
RORUPEX	Selection Rule Expression Parser
RORUPP01	Pending Patients (Errors)
RORUPP02	Pending Patients (Events)
RORUPR	Selection Rules Preparation
RORUPR1	Selection Rules Preparation
RORUTL01	Utilities
RORUTL02	Utilities
RORUTL03	Encryption/Decryption
RORUTL04	Registry Stat Report
RORUTL05	Miscellaneous Utilities
RORUTL06	Registry Definition Verifier
RORUTL07	Test Entry Points

Exported Options

The menu and options exported by the Hepatitis C Case Registry are all located in the ROR namespace. Individual options can be viewed by using the Kernel option XUINQUIRE (Inquire). This option is found on the menu XUMAINT (Menu Management), which is a sub-menu of the EVE (Systems Manager Menu) option.

A diagram of the structure of the Hepatitis C Case Registry menu and its options can be produced by using the Kernel option XUUSERACC (Diagram Menus). Choosing XUUSERACC permits you to further select XUUSERACC1 or XUUSERACC2 menu diagrams with entry/exit actions or abbreviated menu diagrams. This option is found on the menu XUMAINT (Menu management), which is a sub-menu of the EVE (Systems Manager Menu) option.

Historical Data Extraction (RORHDT MAIN)

```
|
|
-----DS Display Extraction Status
|                                     [RORHDT STATUS]
|
---ED Edit [RORHDT EDIT] -----CT Create Extraction Tasks
|                                     [RORHDT CREATE]
|
|-----ER Edit Registry Descriptor
|                                     [RORHDT EDIT REGISTRY]
|
|-----ET Edit Task Descriptor
|                                     [RORHDT EDIT TASK]
|
-----ST Start a Task [RORHDT START]
-----TT Stop a Task [RORHDT STOP]
-----DL Display Task Log [RORHDT LOG]
```

Clinical Case Registries Maintenance (ORMMNT MAIN)¹

```
|
|
-----EAA Edit 'Awaiting ACK' flag
|                                     [ORMMNT AWAITING ACK]
|
-----ELS Edit Lab Search Criteria
|                                     [ORMMNT EDIT LAB SEARCH]
|
-----ERP Edit Registry Parameters
|                                     [ORMMNT EDIT REG PARAMS]
|
-----PLF Print Log Files
|                                     [ORMMNT PRINT LOGS]
|
---PP Pending Patients -----LPE List of Pending Errors
|                                     [ORMMNT PENDING PATIENTS]
|                                     [ORMMNT PENDING ERRORS LIST]
```

¹ Patch ROR*1.0*2 – October 2002 – Updated Maintenance Menu.

Options

	Option Name	Description
ROR SETUP HEPC	HepC Registry Setup	This option allows you to enter parameters of the registry set up process and schedule the task that will populate the Hepatitis C Case Registry
RORHDT MAIN	Historical Data Extraction	<p>This is a top-level management option for a process gathering historical data for each Hepatitis C patient existing on the ROR Registry file. It is run independently of daily updates and extracts. This job requires the intervention of an IRM staff. The back load task will create flat files that can be sent via FTP to a pre-defined area at the AAC. The job gets all extract data patient by patient and writes it to a flat file in HL7 format. If any data errors are found they are reported on a log file, the job then continues onto the next patient on the registry to get the historical data. IRMs can check the status of the run using this user interface. When the job is complete, an option within this user interface shows that the job has been completed. Another option within this interface indicates if any data errors were found. IRMs can view the log file if any errors have been found. The log will provide enough information for IRM to fix the errors. After errors are fixed the job can be re-started via this interface.</p>

	Option Name	Description
RORHDT STATUS	Display Extraction Status	<p>This option displays the transfer status of a selected registry. The historical data extract start and end dates, the output directory name, and task table are displayed. For each task in the table the following information is displayed:</p> <p>#: Sequential number of the task. It is used to select a particular task.</p> <p>Start IEN: IEN within the local registry from which the extract will start. The historical extract processes from this IEN up until the IEN of the next transfer task, e.g., task #1 will start at IEN #1 and end processing with IEN #519.</p> <p>File name: Unique name based on site name and sequential number of the task. This file will contain the extract results when the task has run; it will reside in the designated output directory.</p> <p>Task: Task number assigned by the VA Kernel system for the transfer task.</p> <p>Status: Indicates the status of the transfer task.</p>
RORHDT EDIT	Edit	<p>This option displays a submenu when selected. The submenu contains options that are used to create and edit the parameters of the historical data extraction.</p>
RORHDT CREATE	Create Transfer Tasks	<p>This option allows users to spread historic data processing over several tasks and thus avoid creating one large task that could use up too many system resources by taking a long time to complete. The option displays the amount of patients that reside in the Hepatitis C Case Registry. Users have the option to spread the processing of all these patients over up to twelve separate tasks.</p>

	Option Name	Description
RORHDT EDIT REGISTRY	Edit registry descriptor	<p>This option allows users to edit parameters of historical data extraction in the ROR REGISTRY PARAMETERS file.</p> <p>IRMs should predominately use this option to enter details of the required output directory, it is not encouraged to edit any of the other fields as they will either be automatically populated during the install of the KIDS build or via the other options within this historical data extraction interface.</p>
ROR EDIT TASK	Edit Task Descriptor	This option allows users to edit parameters of historical data extraction tasks in the ROR HDT TASK file (#798.5)
RORHDT START	Start a Task	This option displays tasks that created with the Create Transfer Tasks. Users can select a task, enter a date, and time that they want the transfer task to run. This option can be re-entered to re-schedule a previously scheduled task.
RORHDT STOP	Stop a Task	This option allows users to stop a running task or de-queue a task scheduled to run in the future.
RORHDT LOG	Display Task Log	The Display Log option lets users see a log of processed tasks. If any errors were found, they would be logged here. Any errors should be fixed and then the task re-started.

XINDEX

XINDEX is a routine that produces a report called the VA Cross-Reference. This report is a technical and cross-reference listing of one routine or a group of routines. XINDEX provides a summary of errors and warnings for routines that do not comply with VA programming standards and conventions, a list of local and global variables and what routines they are referenced in, and a listing of internal and external routine calls.

XINDEX is invoked from programmer mode: D ^XINDEX.

When selecting routines, select ROR*.

Menu Assignments

- 1) RORHDT MAIN - Contains four sub options for Historic Data Extract - IRM only
- 2) RORMNT MAIN - Contains five sub options for registry maintenance - IRM only
- 3) ROR TASK - This option is placed in TaskMan and drives the nightly updates and extracts
- 4) ROR GUI MENU - Assigned to all users of the ROR GUI system.

Archiving and Purging

Archiving

There are no archiving functions necessary with the Hepatitis C Case Registry software.

Purging

Old event references are automatically purged by the registry update and data extraction task (the [ROR TASK] option) from the EVENT multiple of the ROR PENDING PATIENT file (#798.3) no later than 60 days after they were entered there by the event protocols.

¹ROR LOG file entries (798.7) are automatically purged 14 days after they are entered into this file.

¹ Patch ROR*1.0*2 – October 2002 - Number of days to keep log entries was changed from 30 to 14.
March 2002

Protocols

There are three Protocols are installed with ROR V. 1.0.

ROR EVENT LAB

ITEM TEXT: LAB RESULTS => ROR PENDING PATIENT

TYPE: action

PACKAGE: CLINICAL CASE REGISTRIES

This protocol is used by the Clinical Case Registries package to maintain references to patients who have lab results. The protocol should be subscribed to the LR70 ALL EVSEND RESULTS protocol (this is done by the KIDS during the installation).

If at least one of the defined registries enables event protocols, this protocol will process the Lab events and create references in the ROR PENDING PATIENT file (#798.3).

Otherwise, the protocol will be executed (if it is not disabled or unsubscribed manually) but will not call the processing routine (LAB^ROREVT01).

ENTRY ACTION: D:\$D(^ROR(798.1,"AEP"))>1 LAB^ROREVT01

ROR EVENT PTF

ITEM TEXT: ADMISSION DATA => ROR PENDING PATIENT

TYPE: action

PACKAGE: CLINICAL CASE REGISTRIES

This protocol is used by the Clinical Case Registries package to maintain references to patients who have new admissions. The protocol should be subscribed to the DGPM MOVEMENT EVENT protocol (this is done by the KIDS during the installation).

If at least one of the defined registries enables event protocols, this protocol will process the Lab events and create references in the ROR PENDING PATIENT file (#798.3).

Otherwise, the protocol will be executed (if it is not disabled or unsubscribed manually) but will not call the processing routine (PTF^ROREVT01).

ENTRY ACTION: D:\$D(^ROR(798.1,"AEP"))>1 PTF^ROREVT01

ROR EVENT VISIT

ITEM TEXT: VISIT DATA => ROR PENDING PATIENT

TYPE: action

PACKAGE: CLINICAL CASE REGISTRIES

This protocol is used by the Clinical Case Registries package to maintain references to patients who have new data in the V-files (VISIT, V POV, etc). The protocol should be subscribed to the PXX VISIT DATA EVENT protocol (this is done by the KIDS during the installation).

If at least one of the defined registries enables event protocols, this protocol will process the Lab events and create references in the ROR PENDING PATIENT file (#798.3).

Otherwise, the protocol will be executed (if it is not disabled or unsubscribed manually) but will not call the processing routine (VISIT^ROREVT01).

ENTRY ACTION: D:\$D(^ROR(798.1,"AEP"))>1 VISIT^ROREVT01

Application Programmer Interfaces (APIs)

The Hepatitis C Case Registry software includes two API's for use by other packages. The first API returns a list of patients who are on a given registry. The second API returns all the registries that exist for a given patient. These API's are based on the iteration model. Each API has two entry points. One creates the iterator (called once). The second API gets and returns valid entries (called many times until returning an "end of list" marker).

Below is an example of using the iterator for browsing through all patients of the registry. It prints the IEN of each patient in the registry and the inactivation date (for inactive patients).

```
N IDESC, INCTVDT, RC
S RC=$$PATITER^RORAPI01(. IDESC, "VA HEPC")
I RC<0 W !, "RC= ", RC Q
F S RC=$$NEXTPAT^RORAPI01(. IDESC) Q:RC'>0 D
. S INCTVDT=$P(RC, "^", 2)
. W !, $J(+RC, 6), $S(INCTVDT: " _INCTVDT, 1: ")
I RC<0 W "RC= ", RC, ! Q
Q
```

In the following API descriptions the square brackets are used to indicate an optional parameter. A dot before a parameter name means that the parameter should be passed by reference.

NEXTPAT^RORAPI01

The \$\$NEXTPAT^RORAPI01 function returns the next patient in the registry. If the patient is inactive at the moment, the inactivation date is returned as the second "^"-piece of the result.

\$\$NEXTPAT(. IDESC)

. IDESC Reference to the iterator descriptor (local variable initialized by the \$\$PATITER^RORAPI01 function).

Return values:

<0	Error code
""	End of list
>0	Patient IEN^Inactivation Date

NEXTREG^RORAPI01

The \$\$NEXTREG^RORAPI01 function returns the next registry that the patient belongs to. If the patient is inactive in the returned registry at the moment, the inactivation date is returned as a second "^"-piece of the result.

\$\$NEXTREG(.IDESC)

.IDESC Reference to the iterator descriptor (local variable initialized by the \$\$REGISTER^RORAPI01 function).

Return values:

<0	Error code
""	End of list
>0	Registry IEN^Inactivation Date

PATITER^RORAPI01

The \$\$PATITER^RORAPI01 function creates a patient iterator descriptor in the local variable that is passed as the first parameter. The descriptor contains parameters and current state of the iteration through the patients of the registry.

\$\$PATITER(.IDESC, REGNAME [, MODE])

.IDESC Reference to a local variable where the iterator descriptor will be created.

REGNAME Registry name

MODE Bit flags that define mode of iteration (can be added together):

1	Active patients
2	Inactive patients

The value of 3 is used by default (both active and inactive records).

Return values:

<0	Error code
0	Ok

REGITER^RORAPI01

The \$\$REGITER^RORAPI01 function creates a registry iterator descriptor in the local variable that is passed as the first parameter. The descriptor contains parameters and current state of the iteration through the registries that the patient belongs.

\$\$REGITER(.IDESC, PATIEN [, MODE])

.IDESC Reference to a local variable where the iterator descriptor will be created.

PATIEN Patient IEN (DFN)

MODE Bit flags that define the mode of iteration (can be added together):

1 Registries where the patient is active

2 Registries where the patient is inactive

The value of 3 is used by default (both active and inactive records).

Return values:

<0 Error code

0 Ok

External Interfaces

There is a unidirectional interface from the Local Hepatitis C Case Registry to the AAC based upon HL7 V2.3.1 messaging standards.

The function of the message is to pass information relating to locally identified Hepatitis C patients to a centralized database.

The Transmission Control Protocol/Internet Protocol (TCP/IP) network standard is used for supporting the Transport layer and Network layer of the interface. The Minimal Lower Layer Protocol (MLLP) is used to support the Presentation layer protocol for the interface and will encapsulate the HL7 V2.3.1 messages with start and end markers.

A two-phased process is required for message transactions. VistA will send a batch HL7 message and receive a commit acknowledgment from the AAC over the same link. This tells VistA the message was received correctly. After the message has been processed, the AAC will connect back to the sending VistA site (using the standard listener on the port 5000) and send an application acknowledgment.



Please, see [Appendix A](#) for more details.

External Relations

Before Hepatitis C Case Registry can be installed, the following software applications and patches must be installed and **fully** patched in your accounts.

Application Name	Minimum Version
Automated Information Collection System (AICS)	V 3.0
Adverse Reaction Tracking (ART)	V 4.0
Authorization/Subscription Utility (ASU)	V 1.0
Consult/Request Tracking	V 3.0
Gen. Med. Rec.-Vitals	V. 4.0
Health Summary	V. 2.7
HL7	V. 1.6
Inpatient Medications (IM)	V. 5.0
Kernel	V. 8.0
Laboratory	V. 5.2
Lexicon Utility	V. 2.0
National Drug File (NDF)	V. 4.0
Order Entry/Results Reporting (OE/RR)	V. 3.0
Outpatient Pharmacy	V. 7.0
Patient Care Encounter (PCE)	V. 1.0
Pharmacy Data Management (PDM)	V. 1.0
Problem List	V 2.0
Radiology/Nuclear Medicine	V 5.0
RPC Broker	V 1.1
Registration	V 5.3
Scheduling	V 5.3
Text Integration Utilities (TIU)	V 1.0
ToolKit	V. 7.3
VA FileMan	V. 22.0
Visit Tracking	V 2.0

Required Patches

Before the installation of Hepatitis C Case Registry, the following patches **must** be installed.

Application Name	Patches
Health Level (HL7) V. 1.6	HL*1.6*56
	HL*1.6*57
Laboratory V. 5.2	LR*5.2*215
	LR*5.2*232
	LR*5.2*278
	LR*5.2*222 and LA*5.2*46
	LR*5.2*279
	LR*5.2*280
National Drug File V. 4.0	PSN*4*53

Database Integration Agreements (DBIAs)

The following is a list of approved DBIAs for Hepatitis C Case Registry:

FILE NAME File #	Access	DBIA	Comment
PATIENT #2	Browse IENs	#10035	Supported
	.02, .03, .06, .09, .351, 63	#10035	Supported
	.1112, .301, .302, .323	#10061	Supported; 6^VADPT
	991.01	#2701	Supported; \$\$GETICN^MPIF001
	-9 node	#2762	Private
	.3721 (multiple)	#174	Controlled
	.6	#3301	Private
PTF #45		#418	
		#3157	RPC^DGPTFAPI (supported)
	80 "AAD"	#3545	
LAB DATA #63		#67-C	Surgical pathology for liver biopsy
		#2503	
		#3465	Autopsy node (private)
		#3556	\$\$GCPR^LA7QRY
LABORATORY SITE #69.9	95.3	#3557	Environment check routine
LAB LOINC #95.3	.01 "B"	#3557	
PROTOCOL #101	.01, 4	#872	Controlled; direct read in the screen; pointed to
VISIT #9000010		#1905	SELECTED^VSIT (controlled)
		#1906	LOOKUP^VSIT (controlled)
V POV #9000010.07		#1554	POV^PXAPIIB (private)
PROBLEM #9000011		#928	ACTIVE^GMPLUTL (controlled)
	"MODIFIED"	#2644	Controlled; \$\$MOD^GMPLUTL3
		#2977	GETFLDS^GMPLEDT3 (controlled)
		#1181	Subscription to the DGPM MOVEMENT EVENTS protocol
		#1298	Subscription to the PXX VISIT DATA EVENT protocol
		#3565	Subscription to the LR70 ALL EVSEND RESULTS

Internal Relations

There are no internal relations with this software.

Package-wide Variables

There are no package-wide variables in this software.

Software Product Security

The Hepatitis C Case Registry transmits data to the national data through the VA network; this network has security protection in place. Local coordinators will have their profile within Computerized Patient Record System (CPRS) amended by a local IRM to allow them to have access to the local registry functionality. No other users will be able to access the local registry unless they are set up in this method. All patients Social Security Numbers (SSNs) and names are encrypted before transmission to an agreed upon standard. The fields sent to the AAC become readable upon receipt of the data, however only high-level users have access to the unencrypted fields when viewing the national database.

Alerts

The system produces the following VA Alerts:

If a patient has not passed any selection rules is manually added to the registry the user that added them is sent the following alert.

Please ensure that you add the appropriate ICD-9 code to the Problem List
for: Patient Name Last four: xxxx

If a patient has passed selection rules is inactivated from the registry the following alert is sent to the local coordinator that performed the inactivation.

Patient Name xxxx has an ICD-9 code or hepatitis serology test result consistent with hepatitis C infection but has been inactivated from the Hepatitis C Case Registry. Please make sure that the patient has the correct diagnosis in the medical record.

If a patient has passed no selection rules are reactivated (within the GUI system) the following alert is sent to the local coordinator that performed the reactivation.

Please ensure that you add the appropriate ICD-9 code to the Problem List
for: Patient Name Last four: xxxx

If installation of the package has been scheduled to run in background and there are serious errors during the pre-install and/or post-install, the following alerts is sent to the person who scheduled the installation:

Error during the pre-install. See log files.
Error during the post-install. See log files.

One of the following alerts is sent upon completion of the initial registry population to the person who started the setup task:

Error during the registry setup. See log files.
Registry setup has been completed

The following alert is sent upon completion of the historical data extraction task to the person who started the task:

Historical data extraction task has finished (RC=*nn*)

If the registry update or data transmission task is stopped using the TaskMan option, the following alert is sent to the registry coordinators:

Task has been interrupted by user

If there are serious errors during the registry update or data extraction, the following alerts are sent to the registry coordinators:

Error during the registry update. See log files.

Error during the data extraction. See log files.

Registry coordinators will receive the following alert if there is no application acknowledgement from AAC for the number of days defined by the DAYS TO WAIT FOR ACK field of the ROR REGISTRY PARAMETERS file (#798.1).

No application acknowledgement for *nn* day(s)

No bulletins are used in this software.

Remote Systems

The Hepatitis C Case Registry software transmits data to the Austin Automation Center using standard HL7 via TCP/IP. This process should be run nightly. After the message has been received and processed, the AAC sends an acknowledgment back to the sending site. This acknowledgment contains data that indicates the message was received and will contain information about any data errors that were found during processing at the AAC. These errors include data that indicates the patient and record that caused the problem. This information is stored on the activity log; local coordinators can view this log via the Hepatitis C Case Registry GUI system.

The patient name and Social Security number are encrypted in VistA before transmission to the AAC. At the AAC, these values are unencrypted prior to filing in Oracle.

Archiving

There are no archiving functions necessary with the Hepatitis C Case Registry software.

Purging

ROR LOG File entries (#798.7) are automatically purged 14 days after they are entered into this file.

Contingency Planning

Sites utilizing the Hepatitis C Case Registry should develop a local contingency plan to be used in the event of product problems in a live environment. The facility contingency plan must identify the procedure for maintaining functionality provided by this package in the event of system outage. Field station Information Security Officers (ISOs) may obtain assistance from their Regional Information Officer (RISO).

Interfacing

No interfacing is used in the Hepatitis C Case Registry software.

Electronic Signatures

No electronic signatures are used in the Hepatitis C Case Registry software.

Security Keys

Two security keys will be assigned.

ROR VA HEPC ADMIN	- This key will allow access to the complete GUI system.
ROR VA HEPC USER	- This key will allow access to just the reports and the activity log.



Only users having these keys and those with the FileMan programmer access code (@)⁷ can access the records of the ROR LOCAL REGISTRY and ROR PATIENT files via FileMan.

⁷ Patch ROR*1.0*2 – October 2002 – Note added to Security Section.

Appendix A – HL7 Specifications

General Specifications

Communication Protocol

The HL7 protocol defines only the seventh level of the Open System Interconnect (OSI) Model. This is the application level. Levels one through six involve primarily communication protocols.

The TCP/IP network standard will be used to support the Transport layer and Network layer of the interface. The Minimal Lower Layer Protocol (MLLP) will be used to support the Presentation layer protocol for the interface and will encapsulate the HL7 V2.3.1 messages with start and end markers.

One link only will be required for message transactions. VISTA will send a batch HL7 message and receive acknowledgments over the same link.

Application Processing Rules

The HL7 protocol itself describes the basic rules for application processing by the sending and receiving systems. Information contained in the protocol will not be repeated here.

HL7 Concepts and Definitions

Messages

A **message** is the atomic unit of data transferred between systems. It is comprised of a group of segments in a defined sequence. Each message has a **message type** that defines its purpose. A three-character code contained within each message identifies its type.

The real-world event that initiates an exchange of messages is called a trigger event. These codes represent values such as **a patient is admitted** or **an order event occurred**. There is a one-to-many relationship between message types and trigger event codes. The same trigger event code may not be associated with more than one message type.

Segments

A **segment** is a logical grouping of **data fields**. Segments of a message may be required or optional. They may occur only once in a message or they may be allowed to repeat. Each segment is given a name. Each segment is identified by a unique three-character code known as the Segment ID.

Fields

A field is a string of characters. HL7 does not care how systems actually store data within an application. When fields are transmitted, they are sent as character strings.

Except where noted, HL7 data fields may take on the null value. Sending the null value, which is transmitted as two double quote marks (“”), is different from omitting an optional data field. The difference appears when the contents of a message will be used to update a record in a database rather than create a new one. If no value is sent, (i.e., it is omitted) the old value should remain unchanged. If the null value is sent, the old value should be changed to null.

Position (sequence within the segment)

Defines the ordinal position of the data field within the segment. This number is used to refer to the data field in the text comments that follow the segment definition table. In the segment attribute tables this information is in a column labeled **SEQ**.

Maximum length

Defines the maximum number of characters that one occurrence of the data field may occupy. It is calculated to include the component and sub component separators. Because the maximum length is that of a single occurrence, the repetition separator is not included in calculating the maximum length. In the segment attribute tables this information is in a column labeled **LEN**.

Data type

Defines the restrictions on the contents of the data field. There are a number of data types defined by HL7. The data types used in this specification are described in the next section titled Data Types. This information is in a column labeled **DT** in the segment attribute tables.

Optionality

Defines whether the field is required, optional, or conditional in a segment. The designations are:

Value	Description
B	Left in for backward compatibility with previous versions of HL7. The field definitions following the segment attribute table should denote the optionality of the field for prior versions.
C	Conditional on the trigger event, or some other field.
O	Optional
R	Required
X	Not used with this trigger event

In the segment attribute tables this information is in a column labeled **OPT**.

Repetition

Defines whether the field may repeat. The designations are:

Value	Description
N	No repetition permitted
Y	The field may repeat an indefinite or site-determined number of times
Y/Integer	The field may repeat up to the number specified by the integer

Each occurrence may contain the number of characters specified by the field's maximum length. In the segment attribute tables this information is in a column labeled **RP/#**.

Message Delimiters

In constructing a message, certain special characters are used. They are the segment terminator, the field separator, the component separator, subcomponent separator, repetition separator, and escape character.

The segment terminator is always a carriage return (in ASCII, a hex 0D).

The other delimiters are defined in the MSH segment, with the field delimiter in the fourth character position, and the other delimiters occurring as in the field called Encoding Characters, which is the first field after the segment ID. The delimiter values used in the MSH segment are the delimiter values used throughout the entire message.

The Clinical Case Registries interface uses the HL7 standard values, found in the table below:

Delimiter	Suggested Value	Encoding Character Position	Usage
Segment Terminator	<cr> hex 0D		Terminates a segment record. Implementers cannot change this value.
Field Separator			Separates 2 adjacent data fields within a segment. It also separates the segment ID from the 1 st data field in each segment
Component Separator	^	1	Separates 2 adjacent components of data fields, where allowed
Subcomponent Separator	&	2	Separates adjacent subcomponents of data fields, where allowed. If there are no subcomponents, it may be omitted
Repetition Separator	~	3	Separates multiple occurrences of a field, where allowed
Escape Character	\	4	Escape Character for use with any field represented by an ST, TX or FT data type, or for use with the data component of the ED data type.

Data Types

Data Type Category/ Data type	Data Type Name	Notes/Format
Alphanumeric		
ST	String	
TX	Text data	
FT	Formatted text	
Numerical		
CQ	Composite quantity with units	<quantity (NM)> ^ <units (CE)>
NM	Numeric	
SI	Sequence ID	
Identifier		
ID	Coded values for HL7 tables	
IS	Coded value for user-defined tables	
HD	Hierarchic designator	<namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)> Used only as part of EI and other data types.
EI	Entity identifier	<entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>
PL	Person location	<point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ < location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>
PT	Processing type	<processing ID (ID)> ^ <processing mode (ID)>
Date/Time		
DT	Date	YYYY[MM[DD]]
TM	Time	HH[MM[SS[.S[S[S[S]]]]]][/+/-ZZZZ]
TS	Time stamp	YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][/+/-ZZZZ] ^ <degree of precision>

Code Values		
CE	Coded element	<identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>
CX	Extended composite ID with check digit	<ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ < assigning authority (HD)> ^ <identifier type code (IS)> ^ < assigning facility (HD)>
XCN	Extended composite ID number and name	In Version 2.3, use instead of the CN data type. <ID number (ST)> ^ <family name (ST)> & <last_name_prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (ST)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>
Generic		
CM	Composite	No new CM's are allowed after HL7 Version 2.2. Hence there are no new CM's in Version 2.3.
Demographics		
XAD	Extended address	In Version 2.3, replaces the AD data type. <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>
XPN	Extended person name	In Version 2.3, replaces the PN data type. <family name (ST)> ^ <given name (ST)> & <last_name_prefix (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)> ^ <name representation code (ID)>
XON	Extended composite name and ID number for organizations	<organization name (ST)> ^ <organization name type code (IS)> ^ <ID number (NM)> ^ <check digit (NM)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility ID (HD)> ^ <name representation code (ID)>
XTN	Extended telecommunications number	In Version 2.3, replaces the TN data type. [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>
Time Series:		
TQ	Timing/quantity	For timing/quantity specifications for orders, see Chapter 4, Section 4.4. <quantity (CQ)> ^ <interval (*)> ^ <duration (*)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <priority (ST)> ^ <condition (ST)> ^ <text (TX)> ^ <conjunction (ID)> ^ <order sequencing (*)> ^ <performance duration (CE)> ^ <total occurrences (NM)>

Use of Escape Sequences in Text Fields

When a field of type TX, FT, or CF is being encoded, the escape character may be used to signal certain special characteristics of portions of the text field. The escape character is whatever display ASCII character is specified in the Escape Character component of *MSH-2-encoding characters*.

The character \ must be used to represent the character so designated in a message. An **escape sequence** consists of the escape character followed by an escape code ID of one character, and another occurrence of the escape character. The following escape sequences are used by the Hepatitis C HL7 interface:

Value	Description
\S\	Component separator
\T\	Subcomponent separator
\R\	Repetition separator
\E\	Escape character

Specification Conventions

Segment Tables Definitions

Column	Description
SEQ	Ordinal position of the data field within the segment
LEN	Maximum length of a field
DT	HL7 data type
OPT	R equired, O ptional, C onditional, or B ackward compatible
RP/#	Repeating field (Y/N/#)
ELEMENT NAME	Field description
COMMENTS	Set to 'See Notes', if the field is used in this interface

HL7 Messages

HL7 Message Definition

The message is sent as a batch message. Each patient will be transmitted as an individual CSU message within the batch message.

CSU – Clinical Trials Message (Event type C09)

The function of this message is to pass information relating to patients on the locally identified registry to a centralized database. The message includes patient demographics; registry information; relevant pharmacy, pathology, radiology, and lab data.

Pharmacy/Drug, Radiology, Pathology, and Lab data will only be sent if there has been related activity since the patient was last transmitted. Clinical Case Registry data will be sent if any of the above data are sent, or if the Clinical Case Registry data has been amended since last transmission. Demographic data will be sent for all patients included in the transmission.

Segment ID	Segment Name	Required	Repeating	Notes
MSH	Message Header	Y	N	
PID	Patient Identification	Y	N	Patient Demographics
ZSP	Service Period	N	N	
ZRD	Rated Disabilities	N	Y	
CSR	Clinical Study Registration	N	N	Clinical Registry data
CSP	Clinical Study Phase	N	N	
CSS	Clinical Study Data Schedule	N	N	
ORC	Common Order	N	Y	Pharmacy/Drug data
RXE	Pharmacy/Treatment Encoded Order	N	Y	
OBR	Observation Request	N	Y	Radiology data
OBR	Observation Request	N	Y	Pathology - Autopsy data
OBR	Observation Request	N	Y	Pathology - Liver Biopsy data
OBX	Observation/Result	N	Y	
OBR	Observation Request	N	Y	Lab data
NTE	Notes and Comments	N	Y	
OBX	Observation/Result	N	N	
NTE	Notes and Comments	N	Y	

CSU Segment Attributes and Field Definitions

MSH – Message Header Segment - Attributes

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	COMMENTS
1	1	ST	R		Field Separator	See Notes
2	4	ST	R		Encoding Characters	See Notes
3	180	HD	O		Sending Application	See Notes
4	180	HD	O		Sending Facility	See Notes
5	180	HD	O		Receiving Application	See Notes
6	180	HD	O		Receiving Facility	See Notes
7	26	TS	O		Date/Time Of Message	See Notes
8	40	ST	O		Security	
9	7	CM	R		Message Type	See Notes
10	20	ST	R		Message Control ID	See Notes
11	3	PT	R		Processing ID	See Notes
12	8	ID	R		Version ID	See Notes
13	15	NM	O		Sequence Number	
14	180	ST	O		Continuation Pointer	
15	2	ID	O		Accept Acknowledgment Type	See Notes
16	2	ID	O		Application Acknowledgment Type	See Notes
17	2	ID	O		Country Code	See Notes
18	6	ID	O	Y/3	Character Set	
19	60	CE	O		Principal Language Of Message	

MSH field definitions

MSH-1 Field Separator

Definition: This field contains the separator between the segment ID and the first real field, *MSH-2-encoding characters*. As such it serves as the separator and defines the character to be used as a separator for the rest of the message.

Value: | (ASCII 124).

MSH-2 Encoding Characters

Definition: This field contains the four characters in the following order: the component separator; repetition separator; escape character; and subcomponent separator.

Value: ^~\& (ASCII 94, 126, 92, and 38, respectively).

MSH-3 Sending Application

Definition: This field uniquely identifies the sending application among all other applications within the network enterprise. The network enterprise consists of all those applications that participate in the exchange of HL7 messages within the enterprise. Entirely site defined.

MSH-4 Sending Facility

Definition: This field contains the address of one of several occurrences of the same application within the sending system. Entirely user-defined.

MSH-5 Receiving Application

Definition: This field uniquely identifies the receiving application among all other applications within the network enterprise. The network enterprise consists of all those applications that participate in the exchange of HL7 messages within the enterprise. Entirely site defined.

MSH-6 Receiving Facility

Definition: This field identifies the receiving application among multiple identical instances of the application running on behalf of different organizations. Entirely site defined.

MSH-7 Date/Time Of Message

Definition: This field contains the date/time that the sending system created the message. If the time zone is specified, it will be used throughout the message as the default time zone.

Format: YYYYMMDDHHMMSS+/-ZZZZ

MSH-9 Message Type

Components: <message type (ID)> ^ <trigger event (ID)>

Definition: This field contains the message type and trigger event for the message. The Clinical Case Registries package sends a CSU message type with the trigger event C09.

Value: CSU^C09

MSH-10 Message Control ID

Definition: This field contains a number or other identifier that uniquely identifies the message. The receiving system echoes this ID back to the sending system in the Message Acknowledgment segment (MSA).

MSH-11 Processing ID

Components: <processing ID (ID)> ^ <processing mode (ID)>

Definition: This field identifies the current status of the interface. The processing mode component is not used.

Value	Description
P	Production
D	Debugging
T	Training

MSH-12 Version ID

Definition: This field is matched by the receiving system to its own version to be sure the message will be interpreted correctly.

Value: 2.3.1.

MSH-15 Accept Acknowledgment Type

Definition: This field defines whether the sending system requires an acknowledgment from the receiving system when a message is accepted. The Clinical Case Registries interface will never require an accept acknowledgment.

Value: NE

MSH-16 Application Acknowledgment Type

Definition: This field defines whether the sending system requires an acknowledgment from the receiving system when a message has been validated by the application. For the Clinical Case Registries interface, an application acknowledgment is always required.

Value: AL

MSH-17 Country Code

Definition: This field contains the country of origin for the message.

Value: USA.

Example MSH segment

```
MSH|^~&|499|ROR SITE|AAC|AAC|20010823145709-0600||CSU^C09^CSU_C09|499108920-77|P|2.3.1||NE|AL|USA
```

PID – Patient ID Segment - Attributes

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	COMMENTS
1	4	SI	O		Set ID - Patient ID	
2	20	CX	O		Patient ID (External ID)	See Notes
3	20	CX	R	Y	Patient ID (Internal ID)	See Notes
4	20	CX	O	Y	Alternate Patient ID – PID	
5	48	XP	R	Y	Patient Name	See Notes
6	48	XP	O		Mother's Maiden Name	
7	26	TS	O		Date/Time of Birth	See Notes
8	1	IS	O		Sex	See Notes
9	48	XP	O	Y	Patient Alias	
10	1	IS	O		Race	See Notes
11	106	XAD	O	Y	Patient Address	See Notes
12	4	IS	B		County Code	
13	40	XTN	O	Y	Phone Number – Home	
14	40	XTN	O	Y	Phone Number – Business	
15	60	CE	O		Primary Language	
16	1	IS	O		Marital Status	
17	3	IS	O		Religion	
18	20	CX	O		Patient Account Number	
19	16	ST	O		SSN – Patient	See Notes
20	25	DLN	O		Driver's License Number – Patient	
21	20	CX	O	Y	Mother's Identifier	
22	3	IS	O		Ethnic Group	
23	60	ST	O		Birth Place	
24	2	ID	O		Multiple Birth Indicator	
25	2	NM	O		Birth Order	
26	4	IS	O	Y	Citizenship	
27	60	CE	O		Veterans Military Status	
28	80	CE	O		Nationality	
29	26	TS	O		Patient Death Date and Time	See Notes
30	1	ID	O		Patient Death Indicator	

PID field definitions

PID-2 Patient ID (external ID)

Components: <ID number (NM)> ^ <check digit (NM)> ^ <check digit scheme (ID)> ^ <assigning authority (HD)>
Definition: When the patient is from another institution, outside office, etc., the identifier used by that institution could be shown in this field. The Clinical Case Registries package will use the Integration Control Number. The ID component only is used in this field.
Example: 1000720100271387^271387^ISO^VAMPI

PID-3 Patient ID (internal ID)

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>
Definition: This field contains the primary identifier, or other identifiers used by the facility to identify a patient uniquely. The Clinical Case Registries package will include the Patient ID (DFN), and may include old Patient ICN and/or old SSN.
Example: 111112043^5^M11^^SS\14^0^M11^^PI^499&HINES OIFO&99VA4\
1000730100271387^271387^ISO^VAMPI^PI^VAMPI

PID-5 Patient Name

Components: <family name (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)>
Definition: This field contains the legal name of the patient.
Example: DOE^JOHN^Q
Note: For security reasons, this segment will be encrypted before sending.

PID-7 Date/Time of Birth

Definition: This field contains the patient's date of birth.
Format: YYYYMMDD

PID-8 Sex

Definition: This field contains the patient's sex.

Value	Description
F	Female
M	Male
O	Other
U	Unknown

PID-10 Race

Definition: This field refers to the patient's race. Example codes are shown below.

Value	Description
1	Hispanic, White
2	Hispanic, Black
3	American Indian
4	Black
5	Asian
6	Caucasian
7	Unknown

PID-11 Patient address

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code(ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)>

Definition: This field contains the mailing address of the patient. The Clinical Case Registries HL7 interface will send only the zip code.

Example: ^^^^60141

PID-19 SSN – Patient

Definition: This field contains the patient's social security number. A 'P' will follow Pseudo SSN values.

Example: 333224444 or 333224444P

Note: For security reasons, this segment will be encrypted before sending.

PID-29 Patient Death Date and Time

Definition: This field contains the date on which the patient death occurred.

Format: YYYYMMDD

Example PID Segment

```
PID||1000720100271387^271387^ISO^VAMPI|95^0^M10||,E*8iI?^GqGI*||19121201|M||7|^^^^60610|||||/A=+A}+ttt$|||||||20010104
```

ZSP – Service Period Segment - Attributes

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	COMMENTS
1	4	SI	R		Set ID – ZSP	See Notes
2	1	ID	R		Service Connected?	See Notes
3	3	NM	R		Service Connected Percentage	See Notes
4	2	ID	R		Period of Service	See Notes
5	1	ST	O		Patient Name	

ZSP field definitions

ZSP-1 Set ID - ZSP

Definition: This field holds the set id. The set id will be set to 1 by default.

ZSP-2 Service Connected?

Definition: This field will indicate if the patient is Service Connected.

Value	Description
1	Service Connected
0	Not Service Connected

ZSP-3 Service Connected Percentage

Definition: This field holds the percentage of service connection. Values range from 0 to 100.

ZSP-4 Period of Service

Definition: This field holds the period of service that best describes the patient.

A few example codes are shown:

Value	Description
0	Korean
1	World War I
2	World War II
3	Spanish American
4	Pre-Korean
5	Post-Korean
7	Vietnam Era
8	Post-Vietnam
9	Other or None

Example ZSP segment

ZSP|1|1|30|8|""|0|0|""

ZRD – Rated Disabilities Segment - Attributes

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	COMMENTS
1	4	SI	R		Set ID – ZRD	See Notes
2	4	ID	R		Rated Disabilities (VA)	See Notes
3	3	NM	R		Disability %	See Notes
4	1	ID	0		Service Connected	

ZRD field definitions

ZRD-1 Set ID - ZRD

Definition: This field holds the set id. The set id will be set to 1 by default.

ZRD-2 Rated Disabilities (VA)

Definition: This field holds the disability condition for this patient

A few example codes are shown:

Value	Description
5000	Osteomyelitis
5001	Bone Disease
5002	Rheumatoid Arthritis
5003	Degenerative Arthritis
5004	Arthritis

ZRD-3 Disability %

Definition: This field holds the percentage at which the VA rated this disability for this patient.
Values range from 0 to 100.

Example ZRD segment

ZRD|1|7709^HODGKINS DISEASE|100|1

CSR – Clinical Study Registration Segment - Attributes

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	COMMENTS
1	60	EI	R		Sponsor Study ID	See Notes
2	60	EI	O		Alternate Study ID	
3	60	CE	O		Institution Registering the Patient	See Notes
4	30	CX	R		Sponsor Patient ID	See Notes
5	30	CX	O		Alternate Patient ID - CSR	
6	26	TS	R		Date/time of Patient Study Registration	See Notes
7	60	XCN	O		Person Performing Study Registration	
8	60	XCN	R		Study Authorizing Provider	
9	26	TS	C		Date/time Patient Study Consent Signed	
10	60	CE	C		Patient Study Eligibility Status	See Notes
11	26	TS	O	Y/3	Study Randomization Date/time	
12	200	CE	O	Y/3	Randomized Study Arm	
13	200	CE	O	Y/3	Stratum for Study Randomization	
14	60	CE	C		Patient Evaluability Status	See Notes
15	26	TS	C		Date/time Ended Study	See Notes
16	60	CE	C		Reason Ended Study	See Notes

CSR field definitions

CSR-1 Sponsor Study ID

Components: <entity identifier (ST)> ^ <assigning authority (HD)>

Definition: This field holds the universal indicator for the registry being transmitted.

Example: VA HEPC^VA

CSR-3 Institution Registering the Patient

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)>

Definition: This field distinguishes the station where the local registry is held.

Example: 499^HINES OIFO^99VA4

CSR-4 Sponsor Patient ID

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Definition: This field contains the main patient id (DFN) within the local station.

Example: 15^9^M11^^PI^

CSR-6 Date/time of Patient Study Registration

Definition: This field holds the date that the patient was entered into the registry.

Format: YYYYMMDD

CSR-10 Patient Study Eligibility Status

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)>

Definition: This field indicates a reason for manual addition of the patient to the registry.

Example codes for Hepatitis C Registry are shown:

Value	Description
1	HepC antibody test result from another VA (untreated)
2	HepC antibody test result from outside VA (untreated)
3	Previously diagnosed and treated for HepC (within VA)
4	Previously diagnosed and treated for HepC (outside VA)
5	Other

Example: 3^Previously diagnosed and treated for HepC (within VA)^99VA7991

CSR-14 Patient Evaluability Status

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)>

Definition: This field indicates the use of Investigational Drugs. Where Investigational Drugs are used, it also indicates whether the medication is marked in the patient's profile.

Value	Description
00	Investigational Drugs Not Used
10	Investigational Drugs Used. Medication not in Profile
11	Investigational Drugs Used. Medication in Profile

Example: 10^Investigation Drugs Used. Medication not in Profile^99VA7986

CSR-15 Date/time Ended Study

Definition: This field indicates the date/time that the patient was inactivated from the registry.

Format: YYYYMMDDHHMMSS

CSR-16 Reason Ended Study

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)>

Definition: This field indicates the reason that the patient was inactivated from the registry.

Example codes for Hepatitis C Registry are shown:

Value	Description
1	Manually entered in error
2	Miscoded ICD-9
3	False Positive Hep C Ab Screening Test
4	Receiving care elsewhere

Example: 2^Miscoded ICD-9^99VA7991

Example CSR segment

CSR|VA HEPC^VA||499^HINES 0IF0^99VA4|97^6^M10^^PI^||20010808||||4^Previously diagnosed and treated for HepC (outside VA)^99VA7991||||10^Investigational Drugs Used. Medication not in Profile.^99VA7986|20010810105843-0600|3^False Positive Hep C Ab Screening Test^99VA7991

CSP – Clinical Study Phase Segment - Attributes

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	COMMENTS
1	60	CE	R		Study Phase ID	See Notes
2	26	TS	R		Date/time Study Phase Began	See Notes
3	26	TS	O		Date/time Study Phase Ended	See Notes
4	60	CE	C		Study Phase Evaluability	

CSP field definitions

CSP-1 Study Phase ID

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)>

Definition: This field indicates the phase of the study for this patient. This will indicate whether the patient has been newly added, reactivated or is being edited.

Value	Description
0	Edit
1	Automatically Added
2	Manually Added
3	Reactivated

Example: 1^Automatically Added^99VA7983

CSP-2 Date/time Study Phase Began

Definition: This field contains the date that the patient began the phase interval. If the patient is being reactivated, this is the reactivation date. If the patient is being added or edited, this date is the registration date.

Format: YYYYMMDD

CSP-3 Date/time Study Phase Ended

Definition: This field contains the date that the patient ended the phase interval. This field will be set to the inactivation date/time if the patient is inactive, else empty.

Format: YYYYMMDDHHMMSS

Example CSP segment

CSP|1^AUTO^99VA7983|20010806081136-0600|19921121

CSS – Clinical Study Data Schedule Segment - Attributes

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	COMMENTS
1	60	CE	R		Study Scheduled Time Point	See Notes
2	26	TS	O		Study Scheduled Patient Time Point	See Notes
3	60	CE	O	Y/3	Study Quality Control Codes	

CSS field definitions

CSS-1 Study Scheduled Time Point

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)>

Definition: This field indicates the time point for which some instance of data was scheduled.

Example: O^One Time Only^L

CSS-2 Study Scheduled Patient Time Point

Definition: This field contains the data time frame. It holds the date that the extraction was last run.

Format: YYYYMMDDHHMMSS

Example CSS segment

CSS|O^ONE TIME ONLY^L|19900101

ORC – Common Order Segment – Attributes

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	COMMENTS
1	2	ID	R		Order Control	See Notes
2	22	EI	C		Placer Order Number	See Notes
3	22	EI	C		Filler Order Number	
4	22	EI	O		Placer Group Number	
5	2	ID	O		Order Status	
6	1	ID	O		Response Flag	
7	200	TQ	O		Quantity/Timing	
8	200	CM	O		Parent	
9	26	TS	O		Date/time of Transaction	See Notes
10	120	XCN	O		Entered By	
11	120	XCN	O		Verified By	
12	120	XCN	O		Ordering Provider	See Notes
13	80	PL	O		Enterer's Location	
14	40	XTN	O		Call Back Phone Number	
15	26	TS	O		Order Effective Date/time	See Notes
16	200	CE	O		Order Control Code Reason	See Notes
17	60	CE	O		Entering Organization	See Notes
18	60	CE	O		Entering Device	
19	120	XCN	O		Action By	
20	40	CE	O		Advanced Beneficiary Notice Code	

ORC field definitions

ORC-1 Order Control

Definition: This field determines the function of the order segment. For this interface the code will be set to indicate results follow.

Value: NW

ORC-2 Placer Order Number

Components: <entity identifier (ST)> ^ <assigning authority (HD)>

Definition: This field contains an order number associated with the pharmacy data to follow. In the Clinical Case Registries interface, the field is set to the prescription data to follow. In the Outpatient prescriptions) or the order number (for Inpatient medication).

OP Example: 1000000429^OP

IP Example: 1247^IP

ORC-9 Date/time of Transaction

Definition: This field contains the transaction date/time. For outpatient pharmacy, this may hold the Release Date/Time
Format: YYYYMMDDHHMMSS+/-ZZZZ

ORC-12 Ordering Provider

Components: <ID number (ST)> ^ <family name (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)>
Definition: This field holds the id of the person responsible for the request. Only the first component is set; names are not used to ensure data protection.
Example: 2177

ORC-15 Order Effective Date/Time

Definition: This field contains the order start date/time.
Format: YYYYMMDDHHMMSS

ORC-16 Order Control Code Reason

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>
Definition: This field identifies the reason for the order. For this interface, it will be set to new.
Value: ^^^NEW

ORC-17 Entering Organization

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)>
Definition: This field distinguishes the station where the order was made.
Example: 499^HINES OIFO^99VA4

Example ORC segment (Outpatient)

```
ORC|NW|1000000563^OP|||||20000523055221-0600|||50|||20000522|^^^^NEW|499^  
HINES OIFO^99VA4
```

Example ORC segment (Inpatient)

```
ORC|NW|1756^IP|||||||80|||199303030900-0600|^^^^NEW|499^HINES OIFO^99VA4
```

RXE – Pharmacy/Treatment Encoded Order Segment – Attributes

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	COMMENTS
1	200	TQ	R		Quantity/Timing	See Notes
2	100	CE	R		Give Code	See Notes
3	20	NM	R		Give Amount – Minimum	See Notes
4	20	NM	O		Give Amount - Maximum	
5	60	CE	R		Give Units	See Notes
6	60	CE	O		Give Dosage Form	
7	200	CE	O	Y	Provider's Administration Instructions	See Notes
8	200	CM	C		Deliver-to Location	
9	1	ID	O		Substitution Status	
10	20	NM	C		Dispense Amount	See Notes
11	60	CE	C		Dispense Units	
12	3	NM	O		Number of Refills	
13	60	XCN	C		Ordering Provider's DEA Number	
14	60	XCN	O		Pharmacist/Treatment Supplier's Verifier ID	
15	20	ST	C		Prescription Number	
16	20	NM	C		Number of Refills Remaining	
17	20	NM	C		Number of Refills/Doses Dispensed	
18	26	TS	C		Date/time of Most Recent Refill or Dose Dispensed	See Notes
19	10	CQ	C		Total Daily Dose	See Notes
20	1	ID	O		Needs Human Review	See Notes
21	200	CE	O	Y	Pharmacy/Treatment Supplier's Special Dispensing Instructions	
22	20	ST	C		Give Per (Time Unit)	
23	6	CE	O		Give Rate Amount	
24	60	ST	O		Give Rate Units	See Notes
25	20	NM	O		Give Strength	
26	20	CE	O		Give Strength Units	
27	200	CE	O	Y	Give Indication	
28	20	NM	O		Dispense Package Size	
29	60	CE	O		Dispense Package Size Unit	
30	2	ID	O		Dispense Method	See Notes

RXE field definitions

RXE-1 Quantity Timing

Components: <quantity (CQ) > ^ <interval (CM)> ^ <duration> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <priority (ID)> ^ <condition (ST)> ^ <text (TX)> ^ <conjunction (ID)> ^ <order sequencing>

Definition: This field is used by the pharmacy supplier to express the fully coded version of the drug or treatment timing. It is not used by the Clinical Case Registries interface, but it is a required field, and is therefore set to "".

Value: ""

RXE-2 Give Code

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the medical substance provided to the patient. It holds the National Drug Code and name together with the VA Drug Code and name.

The first piece is the NDC, second piece is the VA Product name, third piece identifies the coding scheme as PSNDF, fourth piece is the NDF IEN concatenated with the VA drug class, fifth piece is the Generic name, and finally the sixth piece identifies the coding scheme as local to the VA.

Example: 0002-1615-02^MAGNESIUM SULFATE 50% 1GM/2ML AMP^PSNDF
^31-TN406^MAGNESIUM SO4 4MEQ/ML INJ^99PSD

RXE-3 Give Amount – Minimum

Definition: This field contains the ordered amount. This field is required but is not used in the Clinical Case Registries interface, and is therefore set to "".

Value: ""

RXE-5 Give Units

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST) >

Definition: This field contains the units for the give amount.

Example: ^^130^MIC/1.5ML^99PSU

RXE-7 Provider's Administration Instructions

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the ordering provider's instructions to the person administering the drug. This field corresponds to the SIG, and is free text. (Outpatient prescriptions only).

Example: ^APP 1 PATCH TO SKIN QAM AND REMOVE HS (TO REPLACE NITROGLYCERIN 6.5MG SA CAP)

Note: This field may include encoding characters to replace any HL7 separator characters.

RXE-10 Dispense Amount

Definition: This field contains the amount dispensed. Valid entries are between 1 and 99999999 with up to 2 decimal places allowed (Outpatient prescriptions only).

Example: 900.75

RXE-18 D/T of Most Recent Refill or Dose Dispensed

Definition: For outpatient drugs, this field holds the date/time that the most recent fill/refill was dispensed (fill date/time). For inpatient drugs, this field holds the last date/time that the dose should be given (stop date/time)

Format: YYYYMMDDHHMMSS

RXE-19 Total Daily Dose

Components: <quantity (NM)> ^ <units (CE)>

Definition: This field contains the total daily dose for this pharmaceutical (Outpatient prescriptions only). Valid entries range from 1 to 90.

Example: 15

RXE-20 – Needs Human Review

Definition: This field indicates whether human review of dispensing instructions is required. For the Clinical Case Registries interface, this field will hold an indicator of whether the drug has been transmitted to CMOP (Outpatient prescriptions only).

Value	Description
Y	Yes
N	No

RXE-24 – Give Rate Units

Definition: This field contains the units per dose. Valid entries range from 0 to 30, with up to 2 decimal places (Inpatient medication only).

Example: 12.25

RXE-30 Dispense Package Method

Definition: This field indicates the dispensing method. For the Clinical Case Registries interface it will indicate either mail or window (Outpatient prescriptions only).

Value	Description
TR	Traditional - Window
AD	Automatic Dispensing - Mail

Example RXE segment (Outpatient)

```
RXE|""|0081-0249-75^DIGOXIN 0.25MG TAB^PSNDF^372-CV050^DIGOXIN 0.25MG  
TAB^99PSD|""|^20^MG^99PSU||TAKE 1 TABLET(S) BY MOUTH EVERY DAY||  
90|||||19960815|90|N|||||TR
```

Example RXE segment (Inpatient)

```
RXE|""|000300-3629-06^LEUPROLIDE ACETATE 7.5MG/KIT SA SUSP INJ^PSNDF^  
1398-AN500^LEUPROLIDE ACETATE 7.5MG/KIT  
INJ,SUSP,SA^99PSD|""|^33^MG/VIAL  
^99PSU|||||199811100000-0600||||1
```

OBR – Observation Request Segment – Attributes

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	COMMENTS
1	4	SI	O		Set ID - OBR	
2	22	EI	C		Placer Order Number	
3	22	EI	C		Filler Order Number +	See Notes
4	200	CE	R		Universal Service ID	See Notes
5	2	ID	B		Priority	
6	26	TS	B		Requested Date/time	
7	26	TS	C		Observation Date/time #	See Notes
8	26	TS	O		Observation End Date/time #	
9	20	CQ	O		Collection Volume *	
10	60	XCN	O	Y	Collector Identifier *	
11	1	ID	O		Specimen Action Code *	
12	60	CE	O		Danger Code	
13	300	ST	O		Relevant Clinical Info.	
14	26	TS	C		Specimen Received Date/time	
15	300	CM	O		Specimen Source	
16	120	XCN	O	Y	Ordering Provider	See Notes
17	40	XTN	O	Y/2	Order Callback Phone Number	
18	60	ST	O		Placer Field 1	
19	60	ST	O		Placer Field 2	
20	60	ST	O		Filler Field 1 +	
21	60	ST	O		Filler Field 2 +	
22	26	TS	C		Results Rpt/Status Change Date/time +	
23	40	CM	O		Charge to Practice +	
24	10	ID	O		Diagnostic Serv Sect ID	See Notes
25	1	ID	C		Result Status +	
26	200	CM	O		Parent Result +	
27	200	TQ	O	Y	Quantity/Timing	
28	150	XCN	O	Y/5	Result Copies To	
29	150	CM	O		Parent	

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	COMMENTS
30	20	ID	O		Transportation Mode	
31	300	CE	O	Y	Reason for Study	
32	200	CM	O		Principal Result Interpreter +	
33	200	CM	O	Y	Assistant Result Interpreter +	
34	200	CM	O	Y	Technician +	
35	200	CM	O	Y	Transcriptionist +	
36	26	TS	O		Scheduled Date/Time +	
37	4	NM	O		Number of Sample Containers *	
38	60	CE	O	Y	Transport Logistics of Collected Sample *	
39	200	CE	O	Y	Collector's Comment *	
40	60	CE	O		Transport Arrangement Responsibility	
41	30	ID	O		Transport Arranged	
42	1	ID	O		Escort Required	
43	200	CE	O	Y	Planned Patient Transport Comment	
44	60	XON	O	Y	Ordering Facility Name	See Notes
45	106	XAD	O	Y	Ordering Facility Address	
46	48	XTN	O	Y	Ordering Facility Phone Number	
47	106	XAD	O	Y	Ordering Provider Address	

OBR field definitions

OBR-3 Filler Order Number

Components: <entity identifier (ST)> ^ <namespace ID (ST)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field identifies an order uniquely among all orders from the ordering application.

Radiology Example: 6989273.8975-1^072601-1445^L

Lab Example: CH 1017 1

Autopsy Example: AU 98 44

Liver Biopsy Example: SP 99 5

OBR-4 Universal Service ID

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the identifier code for the requested observation/test.

For Radiology, Liver Biopsy and Autopsy procedures, this is the CPT-4 code. For Lab, this is the Loinc code.

Radiology. Example: 73620^RAD EXAM FOOT; 2 VIEWS^C4^165^FOOT 2 VIEWS^99RAP

Autopsy Example: 88099^ UNLISTED NECROPSY PROC^C4

Liver Biopsy: 47000^BX LIVER NEEDLE; PERCUT^C4

Lab Example: 83020.0000^Hemoglobin^99VA64

Note: This field may include encoding characters to replace any HL7 separator characters.

OBR-7 Observation Date/Time

Definition: This is the date/time the observation was obtained, or accession date.

Format: YYYYMMDDHHMMSS

OBR-16 Ordering Provider

Components: <id number (ST)> ^ <family name (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)>

Definition: This field identifies the individual who ordered the test. Only the first component is set; names are not used to ensure data protection.

Example: 2177

OBR-24 Diagnostic Serv Sect ID

Definition: This field is the section of the diagnostic service where the observation was performed.

Value	Description
LAB	Laboratory
RAD	Radiology
SP	Autopsy & Liver Biopsy

OBR-44 Ordering Facility Name

Components: <organization name (ST)> ^ <organization name type code (IS)> ^ <ID Number (NM)> ^
Definition: This field holds the station/division that placed the order.
Example: HINES OIFO^99VA4^499

Example Radiology OBR segment

OBR|||6989798.8767-1^020101-1327^L|75671^ANGIO CAROTID CEREBRAL BILAT^C4^
288^ANGIO CAROTID CEREBRAL BILAT S\T\I^99RAP|||200102011232-0600|||||||
2177|||||RAD|||||||||||||HINES OIFO^99VA4^499

Example Autopsy OBR segment

OBR||AU 99 5||88099^UNLISTED NECROPSY PROC^C4|||199505161100-0600|||||||329||
|||||SP|||||||||||||HINES OIFO^99VA4^499

Example Liver Biopsy OBR segment

OBR||SP 99 5||47000^BX LIVER NEEDLE; PERCUT^C4|||19990316|||||||329|||||
|SP|||||||||||||HINES OIFO^99VA4^499

Example Lab OBR segment

OBR|2||CH 0225 4|84330.0000^Glucose Quant^99VA64|||199802241300-0600|||||^||
199802241300-0600|XXX&Another message part&HL70070&XXX&Another message
part&LN|
24-VA14100^KIMBLE^BRUCE^D|||^^^^^^|19980225125203-0600|

OBX – Observation/Result Segment – Attributes

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	COMMENTS
1	10	SI	O		Set ID – OBX	See Notes
2	3	ID	C		Value Type	See Notes
3	590	CE	R		Observation Identifier	See Notes
4	20	ST	C		Observation Sub-ID	
5	65536 ²	*	C	Y ³	Observation Value	See Notes
6	60	CE	O		Units	See Notes
7	60	ST	O		References Range	See Notes
8	5	ID	O	Y/5	Abnormal Flags	
9	5	NM	O		Probability	
10	2	ID	O	Y	Nature of Abnormal Test	
11	1	ID	R		Observ Result Status	See Notes
12	26	TS	O		Date Last Obs Normal Values	
13	20	ST	O		User Defined Access Checks	
14	26	TS	O		Date/Time of the Observation	
15	60	CE	O		Producer's ID	See Notes
16	80	XCN	O	Y	Responsible Observer	
17	60	CE	O	Y	Observation Method	

OBX field definitions

OBX-1 Set ID - OBX

Definition: This field identifies the sequence number. This field will hold an incrementing counter, starting from 1.

OBX-2 Value Type

Definition: This field identifies the format of the observation value in OBX-5.

Value	Description
CE	Coded Entry
FT	Formatted Text (Display)
NM	Numeric
ST	String Data
TS	Time Stamp (Date & Time)

OBX-3 Observation Identifier

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a unique identifier for the observation. For lab tests, this identifier will be constructed from the Loinc code (if available) and the NLT code. Component 1 will be the Loinc code, component 2 will be the description, component 4 will be the NLT code and component 5 will hold the lab test description. For Liver Biospy, this identifier will be made up of the CPT-4 code from OBR-4 with either 'Microscopic Description' or 'Surgical Path Diagnosis' added, to identify the result.

Lab Example: 777-3^PLATELETS:NCNC:PT:BLD:QN:AUTOMATED
COUNT^LN^85570.0000^Platelet Count Whole Blood^99VA64

Liver Biopsy Examples: 47000&MICROSCOPIC DESCRIPTION^BX LIVER NEEDLE;
PERCUT^C447000&SURGICAL PATH DIAGNOSIS^BX LIVER NEEDLE;
PERCUT^C4

Note: This field may include encoding characters to replace any HL7 separator characters.

OBX-5 Observation Value

Definition: This field contains the result observed by the observation producer. The format depends on the data type in OBX-2.

Example: 3.8 or Free text comment

OBX-6 Units

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the units of the observation value.

Example: GM/DL

OBX-7 References Range

Definition: This field specifies the upper and lower range for the observation value.

Example: 3.4-5.0

OBX-11 Observ Result Status

Definition: This field contains the observation result status.

Value	Description
C	Record coming over is a correction and thus replaces a final result.
F	Final results; Can only be changed with a corrected result
I	Specimen in lab; results pending.
P	Preliminary results.

OBX-15 Producer's ID

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the facility that performed the testing

Example: 499^HINES OIFO^99VA4

Example Lab OBX segment

OBX|1|NM|82565.0000^Creatinine^99VA64||1.6|mg/dL|.9-1.4|H||F||199802231100-0600|499^HINES OIFO^99VA4|4547-VA14100^OCONNELL^TOM|

Example Liver Biopsy OBX segment

OBX|11|FT|47000&SURGICAL PATH DIAGNOSIS^BX LIVER NEEDLE;
PERCUT^C4||NORMAL
||||F

NTE – Notes and Comments Segment – Attributes

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	COMMENTS
1	4	SI	O		Set ID – NTE	See Notes
2	8	ID	O		Source of Comment	See Notes
3	64k	FT	O	Y	Comment	See Notes
4	60	CE	O		Comment Type	

NTE field definitions

NTE-1 Set ID – NTE

Definition: This field contains the set id. It is set to an incrementing count, beginning at 1.

NTE-2 Source of Comment

Definition: This field identifies the source of the comment.

Value	Description
AC	Non-VA facility is source of comment.
L	Ancillary (filler) department is source of comment

NTE-3 Comment

Definition: This field contains the actual comment.

Example: Comprehensive Met Panel results from HINES DEVELOPMENT.

Example NTE segment

NTE|1|AC|Bilirubin Direct results from HINES DEVELOPMENT.|

ACK Segment Attributes and Field Definitions

The Hepatitis C interface will not use enhanced acknowledgment rules. The responding application will merely be required to send an application acknowledgment.

MSA – Message Acknowledgment Segment – Attributes

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	COMMENTS
1	2	ID	R		Acknowledgment Code	See Notes
2	20	ST	R		Message Control ID	See Notes
3	80	ST	O		Text Message	See Notes
4	15	NM	O		Expected Sequence Number	
5	1	ID	B		Delayed Acknowledgment Type	
6	100	CE	O		Error Condition	

MSA field definitions

MSA-1 Acknowledgment Code

Definition: This field holds the acknowledgment code, which defines whether the message was accepted or rejected.

Value	Description
AA	Application Accept
AE	Application Error
AR	Application Reject

MSA-2 Message Control ID

Definition: This field contains the message control ID of the message sent by the sending system. This allows the sending system to associate the response with the original message.

MSA-3 Text Message

Definition: This field will describe an error condition in the event of an AE or AR being returned. The text can be displayed in an error log.

Example MSA segment

MSA|AA|49932166

ERR – Error Segment – Attributes

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	COMMENTS
1	80	CM	R	Y	Error Code and Location	See Notes

ERR field definitions

ERR-1 Error Code and Location

Components: <segment ID (ST)> ^ <sequence (NM)> ^ <field position (NM)> ^ <code identifying error (CE)>

Definition: This field identifies any segment within the message that was erroneous. These errors did not cause the message to be rejected, but may have caused individual records to not be filed.

Component 1 holds the name of the segment where the error occurred. Component 2 holds the sequence of that segment within the message. Component 3 identifies the field that contained the error.

Component 4 will be populated with a free text error message derived from an error code and information from the original message.

OBR, OBX and NTE segment errors will return information from the related OBR-3 and OBR-7 fields. In the case of Radiology errors, subcomponent 2 of OBR-3 will be returned.

ORC and RXE segment errors will return information from the related ORC-2 and ORC-9 fields.

PID, ZSP, ZRD, CSR, CSP and CSS segment errors need return only the error code.

Example ERR segments

```
ERR|OBX^4^5^&100501:SP 99 5:19990306
ERR|OBR^2^4^&090401:020101-1327:200102011232-0600
ERR|RXE^1^2^&080201:1000000563-0P:20000523055221-0600
ERR|CSR^1^10^&041001
```

Error Codes (used in ERR-1)

Error	Segment	Field #	Description
010201	PID	2	Non-numeric ICN
010202	PID	2	ICN longer than 16 characters
010301	PID	3	Non-numeric DFN
010302	PID	3	Non-numeric station number
010303	PID	3	Station longer than 3 characters
010501	PID	5	Non-alphabetic characters in Family Name
010502	PID	5	Family name longer than 35 characters
010503	PID	5	Non-alphabetic characters in Given Name
010504	PID	5	Given name longer than 25 characters
010505	PID	5	Non-alphabetic characters in Middle Initial or Name
010506	PID	5	Middle Initial or Name longer than 25 characters
010701	PID	7	Non-numeric Date of Birth
010702	PID	7	Date of Birth formatted incorrectly
010801	PID	8	Invalid Sex value
011001	PID	10	Invalid Race indicator
011101	PID	11	Invalid Zip Code length
011102	PID	11	Zip Code contains non-numeric characters
011901	PID	19	Non-numeric SSN
011902	PID	19	SSN longer than 9 characters
011903	PID	19	SSN shorter than 9 characters
011904	PID	19	Invalid Pseudo SSN indicator
012901	PID	29	Non-numeric Date of Death
012902	PID	29	Date of Death formatted incorrectly
020201	ZSP	2	Service Connected Indicator invalid
020301	ZSP	3	Service Connected Combined % value non-numeric
020301	ZSP	3	Service Connected Combined % over 100
020401	ZSP	4	Veteran Era of Service is non alphanumeric
020402	ZSP	4	Veteran Era of Service longer than 1 character
030201	ZRD	2	Service Connected Codes (Rated Disability) out of bounds
030301	ZRD	3	Service Connected % value non-numeric
030302	ZRD	3	Service Connected % over 100
040101	CSR	1	Registry identifier contains non-alphanumeric characters
040102	CSR	1	Registry identifier longer than 30 characters
040103	CSR	1	Registry identifier shorter than 3 characters
040301	CSR	3	Non-numeric Station number
040302	CSR	3	Station longer than 3 characters
040401	CSR	4	Non-numeric DFN
040601	CSR	6	Date entered into registry has invalid format
041001	CSR	10	Invalid Hep C supporting evidence field
041401	CSR	14	Investigational drugs/Medication in profile indicator non-numeric
041402	CSR	14	Investigational drugs/Medication in profile indicator contains too many characters
041501	CSR	15	Inactivation date has invalid format

Error	Segment	Field #	Description
041601	CSR	16	Invalid Hep C reason for inactivation
050101	CSP	1	Invalid new patient field
050201	CSP	2	Reactivation date has invalid format
060201	CSS	2	Date of last extraction has invalid format
070301	ORC	3	Released date/time has invalid format
071201	ORC	12	Non-integer provider ID
071501	ORC	15	Reactivation date has invalid format
071701	ORC	17	Station has invalid length
071702	ORC	17	Station contains non-alphanumeric characters
080201	RXE	2	NDC code has invalid length
080202	RXE	2	Drug name has invalid length
080203	RXE	2	VA Drug class has invalid length
080204	RXE	2	VA Product name has an invalid length
080205	RXE	2	VA drug code out of range
080701	RXE	7	SIG has invalid length
081001	RXE	10	Amount value below valid range
081002	RXE	10	Amount has invalid length
081003	RXE	10	Amount can only have 2 decimal places
081004	RXE	10	Invalid integer value
081801	RXE	18	Fill date/time has invalid format
081802	RXE	18	Stop date/time has invalid format
081901	RXE	19	Days supply has invalid length
082001	RXE	20	Invalid CMOP indicator
082401	RXE	24	Non-numeric unit/dose
082402	RXE	24	Unit/dose value out of range
082403	RXE	24	Unit/dose can only have 2 decimal places
083001	RXE	30	Invalid Mail/Window code
090401	OBR	4	Radiology CPT code does not exist on the CPT-4 Procedure Code File
090402	OBR	4	CPT-4 Procedure code longer than 5 characters
090403	OBR	4	CPT-4 Procedure code less than 5 characters
090404	OBR	4	Invalid procedure code type for CPT-4
090406	OBR	4	NLT code shorter than 5 characters
090407	OBR	4	NLT code longer than 15 characters
090701	OBR	7	Liver Biopsy date has invalid format
090702	OBR	7	Autopsy date has invalid format
090703	OBR	7	Exam date has invalid format
090704	OBR	7	Accession date has invalid format
091601	OBR	16	Non-integer provider ID
094401	OBR	44	Liver Biopsy station non-alphanumeric
094402	OBR	44	Liver Biopsy station less than 3 characters long
094403	OBR	44	Liver Biopsy station longer than 7 characters long
094404	OBR	44	Autopsy station non-alphanumeric
094405	OBR	44	Autopsy station less than 3 characters long
094406	OBR	44	Autopsy station longer than 7 characters long

Error	Segment	Field #	Description
094407	OBR	44	Radiology station non-alphanumeric
094408	OBR	44	Radiology station less than 3 characters long
094409	OBR	44	Radiology station longer than 7 characters long
094410	OBR	44	Lab station non-alphanumeric
094411	OBR	44	Lab station less than 3 characters long
094412	OBR	44	Lab station longer than 7 characters long
100301	OBX	3	Code does not exist within Loinc table
100302	OBX	3	NLT code shorter than 5 characters
100303	OBX	3	NLT code longer than 15 characters
100501	OBX	5	Result longer than 60 characters
100601	OBX	6	Units shorter than 2 characters
100602	OBX	6	Units longer than 10 characters
100701	OBX	7	Range High longer than 50 characters
100702	OBX	7	Range Low longer than 50 characters
101501	OBX	15	Site/specimen shorter than 2 characters
101502	OBX	15	Site/specimen longer than 80 characters
110301	NTE	3	Comment shorter than 1 character
110302	NTE	3	Comment longer than 68 characters

Appendix B – LOINC Codes

This table has test descriptions with sample LOINC codes.⁸

Test Description	Sample LOINC Codes					
Alanine Aminotransferase (ALT)	1742-6	1743-4	1744-2			
Albumin	1751-7					
Alkaline Phosphatase	6768-6	6769-4	12805-8			
Alpha Fetoprotein	1834-1	19176-7	19177-5			
Anti-Hepatitis C Virus Ab—EIA	5198-7	13955-0	16128-1	22324-8	22325-5	22326-3
	22327-1					
Anti-Hepatitis C Virus Ab—RIBA	5199-5	9608-1	9609-9	11076-7	23870-9	
HCV RNA	5010-4	6422-0	10676-5	11011-4	11259-9	20416-4
	20571-6	29609-5				
Anti-Nuclear Antibody (ANA)	5047-6	5048-4	8061-4	9423-5	13068-2	27200-5
Aspartate Aminotransferase (AST)	1920-8					
Bilirubin (Total)	1968-7	1975-2	14629-0	14631-6		
Bilirubin (Direct) = Conjugated = Glucuronidated	15152-2	29760-6				
Creatinine	2160-0	14682-9				
Ferritin	2276-4	14723 -1				
Gamma Glutamyl Transferase (GGT)	2324-2					
Hemoglobin	718-7	24360-0				
Hep A IgM	5181-3	5182-1	13950-1	22314-9	22315-6	
Hepatitis A Ab (total)	5183-9	5184-7	13951-9	20575-7	22312-3	
Hepatitis B core Ab (IgM)	5185-4	5186-2	22319-8	24113-3		
Hepatitis B core Ab (IgG)	13919-6	22318-0				
Hepatitis B core total Ab (core Ab and IgM)	5187-0	5188-8	13952-7	16933-4		
Hepatitis Be Ag	5191-2	5192-0	13954-3			
Hepatitis Bs Ab	5193-8	5194-6	10900-9	16935-9	22322-2	
Hepatitis Bs Ag	5195-3	5196-1	5197-9	7905-3		
HIV Ab	5220-9	5221-7	5223-3	7917-8	7918-6	14092-1
	14126-7	22356-0	22357-8			
INR	5895-8	6301-6				
Neutrophil count (Absolute – ANC)*	751-8	752-6	753-4	26499-4		
Percent Bands	764-1	26508-2				

⁸ Patch ROR*1.0*2 – October 2002 – Updated LOINC® codes.

Test Description (continued)	Sample LOINC Codes					
Percent Neutrophils	769-0	770-8	23761-0	26505-8	26511-6	
Platelets	777-3	778-1	5907-1	9317-9	26515-7	
Prothrombin Time	5902-2	5964-2				
Serum Glucose	1547-9	2345-7	6777-7	14749-6		
Thyrotropin (TSH-serum)	1642-8	3016-3	11579-0	11580-8	14297-6	14999-7
	27975-2					
Wite blood cell count (total)	804-5	6690-2	26464-8			

Test Descriptions	Sample LOINC Codes
NEUTROPHILS SEGMENTED/100 LEUKOCYTES:NFR:PT:BLD:QN:MANUAL COUNT	769-0
LEUKOCYTES:NCNC:PT:BLD:QN:MANUAL COUNT	804-5
ALANINE AMINOTRANSFERASE:CCNC:PT:SER/PLAS:QN:P-5-P	1743-4
THYROTROPIN:ACNC:PT:BLD:QN	3015-5
HEPATITIS C VIRUS AB:ACNC:PT:SER:ORD	16128-1
HEPATITIS C VIRUS AB.IGG:ACNC:PT:SER:QN	16936-7
HEPATITIS C VIRUS RNA:NCNC:PT:SER:QN:PROBE-AMP-TAR	20416-4
HEPATITIS C VIRUS RNA:NCNC:PT:SER:QN:PROBE-AMP-SI	20571-6
NEUTROPHILS/100 LEUKOCYTES:NFR:PT:BLD:QN:MANUAL COUNT	23761-0
HEPATITIS C VIRUS AB BAND PATTERN:IMP:PT:SER:NOM:IB	24011-9
ALKALINE PHOSPHATASE.OTHER FRACTIONS/ALKALINE PHOSPHATASE.TOTAL:CFR:PT:SER/PLAS:QN	26010-9
HEPATITIS C VIRUS RNA:ACNC:PT:SER/PLAS:QN:PROBE-AMP-SIG	29609-5

Appendix C – Extract Elements

The following extract elements chart specifies what field values to extract and transmit to the national registry. National registry coordinators are required to specify exactly what data elements, for each patient, they want to have extracted and transmitted to the national registry.

Element	Multiple	File	Field
Demographic Data			
Patient ID (DFN)		#2	IEN
Station		#2	#.2911
Patient ICN		#2	#991.01
Patient Name		#2	#.01
Patient DOB		#2	#.03
SSN		#2	#.09
Old SSN		#798.4	#.09
Veteran Era of Service		#2	#.323
Service Connected		#2	#.301
Service Connected Comb %		#2	#.302
Service Connected Codes (Rated Disabilities)	M1	#2.04	#.01
Service Connected %	M1	#2	#.302
Sex		#2	#.02
Race		#2	#.06
ZIP		#2	#.1112
Date of Death		#2	#.351
Local registry Data			
Patient ID (DFN)		#2	IEN
Station		#2	#.29.11
Registry		#798.1	#.01
Date Entered into Registry		#798	#1
Date of Last Extraction		#798	#2
New Patient		#798	#3
Hep C Evidence of Positive Hep C Diagnosis		#798	#1001
Investigational Drugs		#798	#6
Medication in Profile		#798	#6.1
Inactivation Date		#798	#2
Hep C Reason for Inactivation		#798	#1000
Re-activation Date		#798	#7

Element	Multiple	File	Field
Outpatient Drugs			
NDC		#50	#31
Drug Name~Coding System		#52	#6
Outpatient Drugs			
VA Drug Class		#50	#2
Order Start Date		#52	#1
Dispensed Amount		#52	#7
Days Supply		#52	#8
SIG		#52	#10
Release Date/Time		#52	#31
Fill Date/Time	M1	#52.1	#.01
CMOP Y/N	M1		
VA Product Name		#50.68	#.01
VA Drug Code		#50.6	.001
Ordering Provider		#52	#4
Station/Division		#52	#5
Mail/Window		#52	#11
Inpatient Drugs			
NDC		#50	#31
Drug Name ~ Coding System		#52	#6
VA Drug Class		#50	#2
Order start date		#55.06	#10
Units/Dose		#55.07	#.02
Stop Date/Time		#55.06	#34
VA Product Name		#50.68	#.01
VA Drug Code		#50.6	#.001
Ordering Provider		#55.06	#20
Station/Division		#55.06	#9
Pathology – Liver Biopsy			
Date/Time Liver Specimen Taken		63.08	.01
Station/Division			
Surgeon/Physician		63.08	0.7
Microscopic Description		63.08	1.1
Surgical Path Diagnosis		63.08	1.4
Pathology – Autopsy			
Autopsy Date		#63	#11
Station/Division		#63	#14.1

Element	Multiple	File	Field
Radiology			
CPT-4 Procedure Code		#71	#9
Station/Division		#70.02	#3
Ordering Provider		#70.03	#14
Exam Date		#70.02	#.01
Lab Tests			
LOINC Code		#60.01	#95.3
NLT Code		#63.04	#.35
Accession Date		#63.04	#.01
Result		#63.04	Dependant on Test
Range High		#60.01	#1
Range Low		#60.01	#2
Units		#60.01	#6
Site/Specimen		#61	#.01
Station/Division		#60.11	#.01
Comments	M1	#63.04	#.99

Appendix D – Data Validation and Error Messaging

Demographics

This demographic data set will always occur once within each patients group of extract data. Each group of patient data is put together to form the HL7 message.

Patient ID (DFN)

Business Rule: If DFN is not numeric - Error Message: Non-numeric DFN.

Station

Business rule: If station non-numeric - Error Message: Non-numeric station number.

Business Rule: If station longer than three characters – Error message: Station longer than 3 characters.

Patient ICN

Business Rule: If ICN non-numeric - Error Message: Non-numeric ICN.

Business Rule: If ICN longer than 16 characters - Error Message: ICN longer than 16 characters.

Patient Name (Family Name)

Business Rule: If not all alphabetical characters - Error Message: Non-alphabetic character(s) in Family name.

Business Rule: If longer than 35 characters - Error Message: Family name longer than 35 characters.

Patient Name (Given Name)

Business Rule: If not all alphabetical characters - Error Message: Non-alphabetic character(s) in given name.

Business Rule: If longer than 25 characters - Error Message: Given name longer than 25 characters.

Patient Name (Middle Initial or Name)

Business Rule: Alphabetical characters - Error Message: Non-alphabetic(s) character(s) in middle initial or name.

Business Rule: If longer than 25 characters. Error Message: Middle initial or name longer than 25 characters.

Date of Birth

Business Rule: If Non-numeric - Error Message: Non-numeric date of birth.

Business Rule: If not formatted to YYYYMMDD - Error Message: Date of birth formatted incorrectly.



If there is no day set the day to '00', if there is no month and no day set the month and day to '0000'.

Social Security Number

Business Rule: If not numeric - Error Message: Non-numeric SSN.

Business Rule: If longer than nine characters in length - Error Message: SSN longer than 9 characters.

Business Rule: SSN shorter than nine characters in length - Error Message: SSN shorter than 9 characters.

Pseudo Social Security Number

Business Rule: If not null or the letter 'P' - Error Message: Invalid pseudo SSN indicator.

Veteran Era of Service

1) Business Rule: If not alphanumeric - Error Message: Veteran era of service is non alphanumeric.

2) Business Rule: If longer than one character - Error Message: Veteran Era of Service longer than 1 character.



Also referred to as Period of Service. AAC will need an Era of service table to resolve these key values.

Service Connected

Business rule: If not 'Y' or 'N' – Error message: Service connected indicator invalid.

Service Connected Combined %

Business rule: If value exists and not numeric – Error message: Service connected Combined % value non-numeric.

Business rule: If value exists and is greater than 100 – Error message: Service connected % over 100.

Service Connected Codes (Rated Disabilities)

Service connected codes and Service connected % for a repeating group that can exist with the patient demographics entry. There can be zero or many of these groups.

Business rule: If smaller than zero or greater than 9999 – Error message: Service Connected Codes (Rated Disability) out of bounds.



AAC will need a table to resolve these codes against a long description taken from Vista file #31. The AAC could do an additional test on their end against this table of codes.

Service Connected %

Business rule: If value exists and not numeric – Error message: Service connected Combined % value non-numeric.

Business rule: If value exists and is greater than 100 – Error message: Service connected % over 100.

Sex

Business rule: If value not 'M' or 'F' or Null – Error message: Invalid sex value.



Null equates to 'Unknown'. This *boxed* element highlights special details about the current topic.

Race

Business rule: If not number between 1 and 7 – Error message: Invalid race indicator.



AAC will need to have a Race table to resolve these values.

Zip

Business rule: If not five characters long – Error message: Invalid zip code length.

Business rule: If not numeric – Error message: Zip code contains non-numeric character(s).

Date of Death

Business Rule: If Non-numeric - Error Message: Non-numeric date of death.

Business Rule: If not formatted to YYYYMMDD - Error Message: Date of death formatted incorrectly.



If there is no day set the day to '00', if there is no month and no day set the month and day to '0000'.

Date of Death Transform Code

Created at the AAC.

Local Registry Data

This Local Registry data set will always occur once within each patients group of extract data.

Patient ID (DFN)

Business rule: Numeric - Error message: Non-numeric DFN.

Station

Business rule: If non-numeric - Error message: Non-numeric station number.

Business rule: If greater than 999 - Error message: Station longer than 3 characters.

Registry

Business rule: If not alphanumeric – Error message: Registry identifier contains non- alphanumeric characters.

Business rule: Not larger than 30 characters – Error message: Registry identifier longer than 30 characters.

Business rule: Not shorter than 3 characters – Error message: Registry identifier shorter than 3 characters.



This value uniquely identifies which registry this data is associated with i.e Hepatitis C (in future more registries may be added). The Hepatitis C registry will be identified by the seven-character code 'VA HEPC' (note upper case).

Date Entered into the Registry

Business rule: If not in date format – Error message: Date entered into registry has invalid format.



This date will be converted prior to transmission to the format YYYYMMDD. If no day is available the day will be transferred as '00', if no day and no month are present the month and day will be sent as '0000'.

Date of Last Extraction

Business rule: If not in date format – Error message: Date of last extraction has invalid format.



This date will be converted before transmission to the format YYYYMMDD. If no day is available the day will be transferred as '00', if no day and no month are present the month and day will be sent as '0000'.

New Patient

Business rule: 0-3 – Error message: Invalid new patient field.



0=No, 1=Automatically added,2=Manually added and 3=Reactivated.

Hep C Supporting Evidence

Business rule: If not 1-5 – Error message: Invalid Hep C supporting evidence field.



1=Hepatitis C antibody test result from another VA (untreated), 2=Hepatitis C antibody test result from outside VA (untreated), 3=Patient previously diagnosed and treated for Hepatitis C (within VA), 4=Patient previously diagnosed and treated for Hepatitis C (outside VA) and 5=Other.

Investigational Drugs/Medication in Profile

Business rule: If investigational drugs/Medication in profile indicator contains values other than ones or zeros – Error message: Investigational drugs/Medication in profile indicator non-numeric.

Business rule: If investigational drugs/Medication in profile indicator is longer than two characters – Error message: Investigational drugs/Medication in profile indicator contains too many characters.



It is not possible to have medication in profile if the patient is not using investigational drugs. This indicator can be null, one character, or two characters long. Null=No investigational drugs and no medication in profile, '0'= No investigational drugs and no medication in profile, '1' = Investigational drugs and no medication in profile, '10'= Investigational drugs and no medication in profile, '11'= Investigational drugs and medication in profile.

Inactivation Date

Business rule: If not in date format – Error message: Inactivation date has invalid format.



This date will be converted before transmission to the format YYYYMMDD. If no day is available the day will be transferred as '00', if no day and no month are present the month and day will be sent as '0000'.

Hep C reason for inactivation

Business rule: If not 1-4 – Error message: Invalid Hep C reason for inactivation.



1=Manually entered in error, 2=Miscoded ICD-9, 3=False Positive Hep C Ab Screening Test, 4=Receiving care elsewhere.

Reactivation Date

Business rule: If not date format – Error message: Reactivation date has invalid format.



This date will be converted before transmission to the format YYYYMMDD. If no day is available the day will be transferred as '00', if no day and no month are present the month and day will be sent as '0000'.

Outpatient Drugs

This Outpatient Drugs data set can occur zero to many times within each patients group of extracted data.

National Drug Code (NDC)

Business rule: If the NDC is small than five characters long or longer than twenty characters – Error message: NDC code has invalid length.

Example: 04767-9101-26.

Drug Name

Business rule: If name is smaller than 1 character or longer than 40 characters – Error message: Drug name has invalid length.

Example: VENLAFAXINE HCL 25MG TAB.

VA Drug Class

Business rule: If drug class value is smaller than one character of longer than five characters – Error message: VA Drug class has invalid length.

Example: XA515.

Order Start Date

Business rule: If not date format – Error message: Reactivation date has invalid format.



This date will be converted before transmission to the format YYYYMMDD. If no day is available the day will be transferred as '00', if no day and no month are present the month and day will be sent as '0000'.

Dispensed Amount

Business rule: If amount is not greater than zero – Error message: Amount value below valid range.

Business rule: If amount is longer than eleven characters – Error message: Amount has invalid length.

Business rule: If amount has more than two characters after the decimal point – Error message: Amount can only have 2 numbers after it decimal.

Business rule: If the value before the decimal is larger than 99999999 – Error message: Invalid integer value.

Example: 30.

Days Supply

Business rule: If not numeric between 1 – 90 – Error message: Days supply has invalid length.

SIG

Business rule: If SIG not between 1 – 200 characters long – Error message: SIG has invalid length.

Example: APP 1 PATCH TO SKIN QAM AND REMOVE HS (TO REPLACE NITROGLYCERIN 6.5MG SA CAP).

Released Date and Time

Business rule: If not date format – Error message: Reactivation date has invalid format.



This date will be converted before transmission to the format YYYYMMDD. If no day is available the day will be transferred as '00', if no day and no month are present the month and day will be sent as '0000'. Time format is in the format HHMMSS.

Examples: 085839 (the 08 is 8am the 58 is 58 minutes past 8am and the 39 is 39 seconds), 1415 (2:15pm) and 1710 (5:10pm).

Fill Date and Time

The fill/date time and CMOP fields form a group that can occur zero to many times within each occurrence of an outpatient drugs entry.

Business rule: If not date format – Error message: Reactivation date has invalid format.



This date will be converted before transmission to the format YYYYMMDD. If no day is available the day will be transferred as '00', if no day and no month are present the month and day will be sent as '0000'. Time format is in the format HHMMSS.

CMOP

Business rule: If not Null, 'Y' or 'N' – Error message: Invalid CMOP indicator.

Note: Null='N'.

VA Product Name

Business rule: If name is shorter than three characters or longer than 64 characters – Error message: VA product name has an invalid length.

Example: PHENOBARBITAL 18.5MG/5ML ELIXIR.

VA Drug Code

Business rule: If code smaller than one or greater than 99999999 – Error message: VA drug code out of range.

Ordering Provider

Business rule: If not an integer – Error message: Non-integer provider ID.



This value (and all other providers being transmitted within this system) is concatenated with the Station number when the AAC receives data; this forms the unique provider ID.

Station

Business rule: If station shorter than three characters or longer than seven – Error message: Station has invalid length.

Business rule: If station has any non-alphanumeric characters – Error message: Station contains non-alphanumeric characters.

Mail/Window

Business rule: If mail window value not 'AD' or 'TR' – Error message: Invalid Mail/Window code.



TR=Window, AD=Mail.

The values 'TR' and 'AD' are used, as there is no Mail/Window segment defined in HL7. Within VistA these values are stored as 'W' and 'M'. It is suggested that the AAC convert back to these values before filing in Oracle.

Inpatient Drugs

This Inpatient Drugs data set can occur zero to many times within each patients group of extracted data.

National Drug Code (NDC)

Business rule: If the NDC is small than five characters long or longer than twenty characters – Error message: NDC code has invalid length.

Example: 04767-9101-26

Drug Name

Business rule: If name is smaller than 1 character or longer than 40 characters – Error message: Drug name has invalid length.

Example: VENLAFAXINE HCL 25MG TAB

VA Drug Class

Business rule: If drug class value is smaller than one character of longer than five characters – Error message: VA Drug class has invalid length.

Example: XA515

Order Start Date

Business rule: If not date format – Error message: Reactivation date has invalid format.



This date will be converted before transmission to the format YYYYMMDD. If no day is available the day will be transferred as '00', if no day and no month are present the month and day will be sent as '0000'. Time format is in the format HHMMSS.

Unit/Dose

Business rule: If not numeric – Error message: Non-numeric unit dose.

Business rule: If less than zero or larger than 30 – Error message: Unit/Dose value of invalid range.

Business rule: If value has more than 2 decimals – Error message: Unit/Dose has too many decimals.

Stop Date/Time

Business rule: If not date format – Error message: Reactivation date has invalid format.



This date will be converted before transmission to the format YYYYMMDD. If no day is available the day will be transferred as '00', if no day and no month are present the month and day will be sent as '0000'. Time format is in the format HHMMSS.

VA Product Name

Business rule: If name is shorter than three character or longer than 64 characters – Error message: VA product name has an invalid length.

Example: PHENOBARBITAL 18.5MG/5ML ELIXIR.

VA Drug Code

Business rule: If code smaller than one or greater than 99999999 – Error message: VA drug code out of range.

Ordering Provider

Business rule: If not an integer – Error message: Non-integer provider ID.



This value (and all other providers being transmitted) is concatenated with the Station number when the AAC receives data; this forms the unique provider ID.

Station

Business rule: If station shorter than three characters or longer than seven – Error message: Station has invalid length.

Business rule: If station has any non-alphanumeric characters – Error message: Station contains non-alphanumeric characters.

Liver Biopsy Pathology

This Liver biopsy data set can occur zero to many times within each patients group of extracted data.

Date/Time Liver Specimen Taken

Business rule: If invalid format – Error message: Liver Biopsy date has invalid format.



This date will be converted before transmission to the format YYYYMMDD. If no day is available the day will be transferred as '00', if no day and no month are present the month and day will be sent as '0000'.

Station

Business rule: If not alphanumeric – Error message: Liver biopsy station non-alphanumeric.

Business rule: If less than 3 characters long – Error message: Liver biopsy station less than 3 characters long.

Business rule: If longer than 7 characters – Error message: Liver biopsy station longer than 7 characters long.

Surgeon Physician

Business rule: If not an integer – Error message: Non-integer provider ID.



This value (and all other providers being transmitted) is concatenated with the Station number when the AAC receives data; this forms the unique provider ID.

Microscopic Description

Please note that this field can occur none or many times.

No rule as this field is free text. The way this field is used varies from site to site.

Surgical Path Description

Please note that this field can occur none or many times.

No rule as this field is free text. The way this field is used varies from site to site.

Autopsy Pathology

This Autopsy data set can occur zero to many times within each patients group of extracted data.

Autopsy Date

Business rule: If invalid format – Error message: Autopsy date has invalid format.



This date will be converted before transmission to the format YYYYMMDD. If no day is available the day will be transferred as '00', if no day and no month are present the month and day will be sent as '0000'.

Station

Business rule: If not alphanumeric – Error message: Autopsy station non-alphanumeric.

Business rule: If less than 3 characters long – Error message: Autopsy station less than 3 characters long.

Business rule: If longer than 7 characters – Error message: Autopsy station longer than 7 characters long.

Radiology

This Radiology data set can occur zero to many times within each patients group of extracted data.

CPT-4 Procedure Code

Business rule: If not a valid code i.e. does not exist on the CPT-4 Procedure Code table – Error code: Radiology CPT code does not exist on the CPT-4 Procedure Code file.

Business rule: If longer than 5 characters – Error message: CPT-4 Procedure code longer than 5 characters.

Business rule: If shorter than 5 characters – Error message: CPT-4 Procedure code shorter than 5 characters.



The AAC will need a CPT-4 table to resolve these values.

CPT-4 Procedure Code Type

Business rule: If type not equal to 'C4' – Error message: Invalid procedure code type for CPT-4.

Station

Business rule: If not alphanumeric – Error message: Radiology station non-alphanumeric.

Business rule: If less than three characters long – Error message: Radiology station less than three characters long.

Business rule: If longer than seven characters – Error message: Radiology station longer than seven characters long.

Ordering Provider

Business rule: If not an integer – Error message: Non-integer provider ID.



This value (and all other providers being transmitted) is concatenated with the Station number when the AAC receives data; this forms the unique provider ID.

Exam Date

Business rule: Invalid format – Error message: Exam date has invalid format.



This date will be converted before transmission to the format YYYYMMDD. If no day is available the day will be transferred as '00', if no day and no month are present the month and day will be sent as '0000'.

Laboratory Test

This Lab Test data set can occur zero to many times within each patients group of extracted data.

LOINC Code

Business rule: If code does not exist on the LOINC table – Error message: Code does not exist within LOINC table.

Business rule: If code not numeric – Error message: LOINC code not numeric.

Business rule: If code < 1 – Error message: LOINC code smaller than 1.

Business rule: If code > 99999999 – Error message: LOINC code bigger than 99999999.



AAC will need national LOINC table.

NLT Code

Business rule: If code shorter than 5 characters – Error message: NLT code shorter than 5 characters.

Business rule: If code longer than 15 characters – Error message: NLT code longer than 15 characters.

Accession Date

Business rule: Invalid format – Error message: Exam date has invalid format.



This date will be converted before transmission to the format YYYYMMDD. If no day is available the day will be transferred as '00', if no day and no month are present the month and day will be sent as '0000'.

Result

Business rule: If code longer than 60 characters – Error message: Result longer than 60 characters.

Range High

Business rule: If range longer than 50 characters – Error message: Range high longer than 50 characters.

Range Low

Business rule: If range longer than 50 characters – Error message: Range low longer than 50 characters.

Units

Business rule: If units shorter than 2 characters – Error message: Units shorter than 2 characters.

Business rule: If code longer than 10 characters – Error message: If units longer than 10 characters.

Site/Specimen

Business rule: If site/specimen shorter than two characters – Error message: Site/specimen shorter than two characters.

Business rule: If site/specimen longer than 80 characters – Error message: Site/specimen longer than 80 characters.

Station

Business rule: If station not alphanumeric – Error message: Lab test station non-alphanumeric.

Business rule: If station less than three characters long – Error message: Lab test station less than three characters long.

Business rule: If station longer than seven characters – Error message: Lab test station longer than 7 characters long.

Comments

The comment field can occur zero to many times within each occurrence of a lab test entry.

Business rule: If comments shorter than one character – Error message: Comment shorter than one character.

Business rule: If comment longer than 68 characters – Error message: Comments longer than 68 characters.

Example:

- 1) FREE TESTOSTERONE WITHIN NORMAL REFERENCE RANGE.
- 2) LH/FSH NOT SENT OUT PER NEW POLICY EFFECTIVE 7/19/99
- 3) SPECIMEN FROZEN. CONTACT LAB IF STILL NEEDED. TEST DONE A VAMC-
10701 EAST BLVD- CLEVELAND
,OH 44106
- 4) TEST PERFORMED AT ARUP LABS-500 CHIPETA WAY-SLC, UTAH 84108

Glossary

Term or Acronym	Description
API	Application Programmer Interface
DBIA	Data Base Integration Agreement
CPRS	Computerized Patient Record System
DFN	File Number—the local/facility patient record number (patient file internal entry number)
Extract Data Definition	This is a set of file and field numbers that identify the data that should be extracted during the extraction process.
Extract Process	This process is run after the update process. This function goes through patients on the local registry and, depending on their status, extracts all available data for the patient, since the last extract was run. The extract transmits any collected data for the patient to the national database via HL7.
FDA	Food and Drug Administration
HL7	Health Level 7
Hepatitis C Rx	A defined list of Hepatitis C medications, see Appendix A of the Clinical Case Registries V. 1.0, Hepatitis C User Manual.
Icons	
ICD-9	International Classification of Diseases, version 9 A numeric code used for identifying patient diagnoses associated with inpatient and outpatient care.
ICN	Integration Control Number, or national VA patient record number
Iteration	A single pass through a group of instructions . Most programs contain loops of instructions that are executed repeatedly. The computer <i>iterates</i> through the loop, which means that it repeatedly executes the loop.
Local Registry	This is the local file of patients that have either passed the selection rules and therefore been added automatically or been added manually by a designated Hepatitis C supervisor.
Local Registry Update	This process adds new patients (that have had data entered since the last update was run and pass the selection rules) to the local registry.
Loop	In programming , a loop is a series of instructions that is repeated until a certain condition is met. Each pass through the loop is called an iteration . Loops constitute one of the most basic and powerful programming concepts.

Term or Acronym	Description
National Case Registry	All sites running the Hepatitis C Case registry transmit their data to this central data registry.
Selection Rules	A pre-defined set of rules that define a Hepatitis C patient. See Appendix A of the Clinical Case Registries V. 1.0, Hepatitis C User manual for selection rules.
PTF	Patient Treatment File—refers to the VistA Inpatient File in the Local Registry Report, under “Reason Added”
VERA	Veterans Equitable Resource Allocation
VHA	Veterans Health Administration
VISN	Veterans Integrated Service Networks
VistA	Veterans Health Information System and Technology Architecture